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ABSTRACT

Each of these citations (over 200 technical reports are theoretical, working, and practical papers) is annotated in a listing arranged by program and project within the program. Projects under Program 1, "Conditions and Processes of Learning," are titled Situational Variables and Efficiency of Concept Learning; Motivation and Individual Differences in Learning and Retention; Task and Training Variables in Human Problem Solving; Basic Pre-Reading Skills: Identification and Improvement; Peer Group Pressures on Learning; and Structure and Concept Attainment Abilities. Those under Program 2, "Processes and Programs of Instruction," are Prototypic Instructional Systems: Elementary Mathematics; Prototypic Instructional Systems: Elementary Science; and Individually Guided Instruction: Elementary Reading. Completed projects in Program 1 are Computer Simulation of Concept Attainment; Rule Learning; Project Motivated Learning; Media and Concept Learning; Rehabilitation of Disadvantaged Youth in Respect to Basic Educational and Social Skills; and Motivation and Concept Learning. Those in Program 2 are A System of Individually Guided Instruction: English Language, Composition, and Literature; Prototypic Instructional Systems: The Teaching and Learning of Concepts in Verbal Argument; and Concepts on Political Science. Completed Program 3 "Facilitative Environments" includes Project MODELS; Models for Effecting Planned Educational Change; and Longitudinal Study of Education Effectiveness of Reorganized School Districts. (JS)

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PUBLICATIONS

OF THE

WISCONSIN RESEARCH AND DEVELOPMENT CENTER

FOR COGNITIVE LEARNING

Herbert J. Klausmeier, Director

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CONTENTS

	page
PROGRAM 1--CONDITIONS AND PROCESSES OF LEARNING	1
Project 101--Situational Variables and Efficiency of Concept Learning	3
Project 102--Phase 2 Motivation and Individual Differences in Learning and Retention	11
Project 103--Task and Training Variables in Human Problem Solving	15
Project 104--Basic Pre-Reading Skills: Identification and Improvement	17
Project 107--Peer Group Pressures on Learning	21
Project 111--Structure of Concept Attainment Abilities	25
PROGRAM 2--PROCESSES AND PROGRAMS OF INSTRUCTION	27
Project 201--Phase 1 Prototypic Instructional Systems: Elementary Mathematics (Patterns in Arithmetic)	29
Phase 2 Prototypic Instructional Systems: Elementary Mathematics (Developing Mathematical Processes)	33
Phase 3 Prototypic Instructional Systems: Elementary Mathematics (Computer Managed System of Mathematics Instruction)	37
Project 203--Prototypic Instructional Systems: Elementary Science	39
Project 204--Individually Guided Instruction: Elementary Reading	43
TECHNICAL DEVELOPMENT PROGRAM	51
COMPLETED PROJECTS IN PROGRAM 1	57
Project 102--Phase 1 Computer Simulation of Concept Attainment	59
Project 105--Rule Learning	61
Project 106--Project Motivated Learning	63
Project 108--Media and Concept Learning	67
Project 109--Rehabilitation of Disadvantaged Youth in Respect to Basic Educational and Social Skills	69
Project 110--Motivation and Concept Learning	71
COMPLETED PROJECTS IN PROGRAM 2	73
Project 202--A System of Individually Guided Instruction: English Language, Composition, and Literature	75
Project 205--Prototypic Instructional Systems: The Teaching and Learning of Concepts in Verbal Argument	79
Project 206--Concepts in Political Science	81

CONTENTS

	page
PROGRAM 3 (FACILITATIVE ENVIRONMENTS)	83
Project 301--Project MODELS	85
Project 302--Models for Effecting Planned Educational Change	89
Project 303--Longitudinal Study of Education Effectiveness of Reorganized School Districts	93
OTHER COMPLETED PROJECTS	95
Project 601--Adult-Re-Education	97
Project 701--Culturally Disadvantaged	100

The objective of the Wisconsin Research and Development Center for Cognitive Learning is to improve educational practices through programmatic research and development. Development efforts are directed toward building a self-renewing system of Individually Guided Education in the elementary school. Research efforts are directed toward understanding cognitive learning in children and related instructional processes; the results are applied to developing a system of Individually Guided Education.

The Center's role in generating knowledge about learning and instruction and developing curriculum materials and procedures is implemented through two programs and technical, dissemination, and business sections. Objectives of Program 1, Conditions and Processes of Learning, are to generate new knowledge about concept learning and cognitive skills, to synthesize existing knowledge and develop general taxonomies, models, or theories of cognitive learning, and to utilize the knowledge in the development of curriculum materials and procedures. This program includes research on concept learning, motivation and retention, creative problem solving, perception, pre-reading skills, and peer teaching techniques.

The objective of Program 2, Processes and Programs of Instruction, is to develop curriculum materials and instructional procedures for elementary and preschool children. To accomplish this, sequences of concepts and cognitive skills within and across subject matter areas are identified, knowledge about instructional procedures is generated, and curriculum materials that implement Individually Guided Education are developed, tested, and refined.

In fiscal year 1969 Program 3, Facilitative Environments, was discontinued. Its objective was to develop, in the natural setting of the school, an environment for facilitating research and development and the introduction of innovations, including the outcomes of Programs 1 and 2. The environments have successfully been developed and the continuing relationships with them have been assumed by the management elements of the Center.

Center publications are annotated on the following pages in a listing arranged by program and by project within program. The name(s) of the principal investigator(s) follow(s) each project title. Publications' titles followed by numbers beginning ED are available from the Educational Resources Information Center. Send Orders to:

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PROGRAM 1

CONDITIONS AND PROCESSES OF LEARNING

Project 101

Title: Situational Variables and Efficiency of Concept Learning

Principal Investigators:
Herbert J. Klausmeier, V. A. C. Henmon Professor of Educational Psychology
Robert Davidson, Assistant Professor of Educational Psychology

TECHNICAL REPORTS

Completed Publications

Klausmeier, Herbert J., Davis, J. Kent, Ramsay, James G., Fredrick, Wayne C., & Davies, Mary H. Concept learning and problem solving: A bibliography, 1950-1964. Technical Report No. 1. vi + 80 pp. October 1965. (Out of print). ED 010 201.

In addition to the bibliography, a definition of concept in terms of attributes and a taxonomy of variables in concept learning are incorporated into the report. Articles from the 45 journals scanned are listed alphabetically by author in either a concept-learning or a problem-solving section and in a combined bibliography by journal by year. An author index is included.

Fredrick, Wayne C. The effects of instruction, concept complexity, method of presentation, and order of concepts upon a concept attainment task. Technical Report No. 3. x + 26 pp. November 1965. (Out of print.) ED 010 203.

In the concept-attainment experience described, sex of the subject, number of relevant and irrelevant attributes, type of instructions, and order of concepts were analyzed as independent variables. Several measures of transfer were obtained.

Ramsay, James G. The attainment of concepts from figural and verbal instances, by individuals and pairs. Technical Report No. 4. x + 14 pp. January 1966. (Out of print.) ED 010 204.

Mr. Ramsay investigated the effects of two types of material and four sequences of concept presentation on the concept-learning performance of individuals and pairs. Five dependent variables were used to assess performance.

Lynch, Daniel O. Concept identification as a function of instructions, lables, sequence, concept type, and test-item type. Technical Report No. 6. x + 16 pp. June 1966. ED 010 212.

The effects of instructions and three stimulus variables--type of label, type of concept, and sequence of concepts by type--are investigated in the described study. Performance was analyzed in terms of four types of test items.

Kalish, Patricia W. Concept attainment as a function of monetary incentives, competition, and instructions. Technical Report No. 8. x + 16 pp. September 1966. ED 010 510.

The three main purposes of the reported study were to compare the effects on concept-attainment behavior of optimal and minimal instructions, two levels of monetary incentive, and high and low competition. Error scores on a classification test for each concept were used in the analysis.

Fang, Marcus C. S. Effect of incentive and complexity on performance of students from two social class backgrounds on a concept identification task. Technical Report No. 10. x + 22 pp. September 1966. ED 010 512.

Mr. Fang extended the use of materials previously used with subjects of two socioeconomic levels. Concept identification problems of three levels of complexity were solved under three incentive conditions.

Lemke, Elmer A., Klausmeier, Herbert J., and Harris, Chester W. The relationship of selected cognitive abilities to concept attainment and information processing. Technical Report No. 11. x + 18 pp. October 1966. ED 010 513.

The effects of eight convergent cognitive abilities on concept attainment behavior were studied under selection and reception learning conditions. Thirty-four task and ability variables were intercorrelated, then analyzed using Alpha techniques.

Sweet, Roger C. Educational attainment and attitudes toward school as a function of feedback in the form of teachers' written comments. Technical Report No. 15. x + 12 pp. November 1966. ED 015 163.

The relationship between a teacher's written comments on a test and subsequent student attainment as measured by test performance has been partially established. Mr. Sweet reports a study further clarifying the relationship and examining the attitude change toward a school subject as a function of the teacher's comment.

Bourne, Lyle E., Jr., Dodd, David H., Guy, Donald E., and Justesen, Donald R. Response-contingent postfeedback intervals in concept identification. Technical Report No. 18. x + 12 pp. February 1967. ED 013 980.

This paper was written during the summer of 1966 while the first author was a visiting scholar at the Center; the data were gathered prior to the summer. Two highly significant theoretical positions in the psychology of learning--incremental learning and all or none--are dealt with in the research reported.

Smuckler, Nancy Sidon. Concept formation as a function of method of presentation and ratio of positive to negative instances. Technical Report No. 27. x + 24 pp. June 1967. ED 015 779.

The effect of two methods of presentation (simultaneous and successive) and four ratios of positive and negative instances (100%, 75%, 50%, and 25% positive instances) upon concept acquisition, transfer, and retention were investigated with 80 Second Graders.

Davis, J. Kent. Concept identification as a function of cognitive style, complexity, and training procedures. Technical Report No. 32. viii + 22 pp. October 1967. ED 024 167.

In two experiments the influence of cognitive style in concept identification were studied. Three levels of complexity were used in the first experiment; four training conditions in the second.

Olton, Robert M., Wardrop, James L., Covington, Martin V., Goodwin, William L., Crutchfield, Richard S., Klausmeier, Herbert J., and Ronda, Teckla. The development of productive thinking skills in fifth-grade children. Technical Report No. 34. ix + 40 pp. November 1967. ED 021 312.

Self-instructional programmed lessons were used to study the relationships (1) between productive thinking abilities and other learner characteristics such as IQ and sex and (2) between level of productive thinking performance and classroom environment as judged to facilitate creative thinking.

Fredrick, Wayne C. Information processing and concept learning at Grade 6, 8, and 10 as a function of cognitive style. Technical Report No. 44. ix + 51 pp. March 1968. ED 024 059.

This research furthers our understanding of the relationship between an organismic factor, "cognitive style," and performance on concept learning and information processing tasks. Results showed that not only do "high analytical" type students perform better on this experiment task, but they also do better in certain school subjects.

Jones, Dorothy L. Relationships between concept learning and selected ability test variables for an adult population. (Chester W. Harris, Chairman of Thesis Committee) Technical Report No. 51. ix + 57 pp. May 1968. (Out of print.) ED 024 331.

A verbal concept-learning task suitable for college students was devised which permitted the externalizing and quantifying of behavior at six points in the learning process. The learning task and 16 non-arbitrarily selected ability tests purporting to measure reasoning, memory, and verbal factors were administered to 102 college females.

Miller, Gerald W. and Davis, J. Kent. Retention and concept identification as functions of concept complexity, method of presentation, stimulus exposure time, and conditions of recall. Technical Report No. 54. ix + 44 pp. May 1968.

Three laboratory experiments were performed with college students to investigate concept identification and recall of information as a function of four selected variables: concept complexity, method of instance presentation, stimulus exposure time, and conditions of recall.

Ramsay, James G. Concept learning as a function of the type of material and type of classification. Technical Report No. 58. ix + 24 pp. June 1968. ED 024 099.

This reports the effects of the number of relevent stimulus dimensions and figural versus verbal stimuli in the concept learning ability of college students. Results force a consideration of mediational variables in explaining this form of cognitive learning.

Kennedy, Barbara J. Motivational effects of individual conferences and goal setting on performance and attitudes in arithmetic. Technical Report No. 61. ix + 20 pp. July 1968. (Out of print.) ED 032 113.

The purpose of this experiment was to compare the motivational effects of cognitive incentives in the form of different goal setting techniques and to investigate the combined effects of cognitive incentives with social interaction in individual pupil-teacher conferences. Results are discussed and interpreted in relation to a classroom research setting.

Bourne, Lyle E., Jr. With discussion by Thomas A. Romberg and Dorothy A. Frayer. Development of conceptual skills: Some preliminary findings. Technical Report No. 81. ix + 18 pp. March 1969. ED 035 953.

A series of exploratory studies and three experiments dealing with conceptual role learning are reported in this paper. Discussants related the results to subject matter fields and to educational research and development.

Klausmeier, Herbert J., Sterrett, Barbara E., Frayer, Dorothy A., Lewis, Susan B., Lee, Vincent W., and Bavry, James L. Concept Learning: A bibliography, 1950-1967. Technical Report No. 82. (Replaces Technical Report No. 1.) vii + 171 pp. April 1969. ED 035 954.

This publication contains a rationale and strategy for compiling the bibliography, a definition of the word "concept," a system for classifying articles by their content, a bibliography of articles dealing with concept learning, and a list of bibliographic entries grouping the articles according to the classification system.

Buchanan, Anne E., Hansen, Patricia J., and Quilling, Mary R. Effects of increased home-school contact on performance and attitude in mathematics. Technical Report No. 89. vii + 5 pp. June 1969. ED 036 446.

The purpose of this experiment was to study the influence of increased home-school contact on children's performance and attitudes in mathematics. Both the single and combined effects of frequent parent-teacher conferences and of homework were studied.

Klausmeier, Herbert J., Sterrett, Barbara E., Robinson, Pamela E., Frayer, Dorothy A., and Bavry, James L. A supplement to Technical Report No. 82, Concept Learning: A bibliography, 1968. Technical Report No. 107. vii + 62 pp. November 1969. ED 036 865.

Included in this report are: Rationale and strategy for compiling a a bibliography of articles concerned with concept learning, a definition of the word concept, and a bibliography of the articles arranged according to their content.

Anandalakshmy, S. Effects of instructional intervention on performance of second-grade children in a categorization game. Technical Report No. 108. x + 75 pp. January 1970. ED 036 860.

Originating from an interest in the language-cognition relationship as reflected in the cognitive abilities of children, this study was planned to examine the differing theoretical implications of Piaget and Vygotsky regarding categorization.

Davidson, Robert E. and Dollinger, Darrell E. The effects of deep structure variations in sentences: free recall and paired associate learning. Technical Report No. 110. x + 14 pp. December 1969.

Three experiments examined the "psychological reality" of deep structure variations for sentences of a language. Analyses of a variety of dependent variables from a variety of experimental paradigms with two different populations suggested that deep structure variations produce differential effects in learning and recall. Two experiments with University students and a third with Second Grade children as Ss were performed.

Frayer, Dorothy. Effects of number of instances and emphasis of relevant attribute values on mastery of geometric concepts by fourth- and sixth-grade children. Technical Report No. 116. xiv + 112 pp. March 1970.

The object of this study was to determine the effect of the number of instances and the emphasis of relevant attribute values on the level of concept mastery.

Eight versions of programed lessons dealing with geometric concepts were prepared in which the independent variables of number of instances (4 or 8) and emphasis of relevant attribute values (presence or absence of attention-directing and review questions) were varied systematically. The subjects were Fourth- and Sixth-Grade children.

Klausmeier, Herbert J., Robinson, Pamela E., Frayer, Dorothy A., and DeVault, M. Vere. A supplement to Technical Report No. 82. Concept Learning: A bibliography, January-June 1969. Technical Report No. 120. xii + 36 pp. May 1970.

This publication contains a rationale and strategy for compiling the bibliography, a definition of the word "concept," a system for classifying articles by their content, a bibliography of articles dealing with concept learning, and a list of bibliographic entries grouping articles according to the classification system.

Sorenson, Juanita S., Schwenn, Elizabeth A., and Bavry, James. The use of individual and group goal-setting conferences as a motivational device to improve student self-direction: A preliminary study. Technical Report No. 123. x + 18 pp. March 1970.

The purpose of this study was to describe the implementation of a school-wide system of individually guided motivation utilizing individual and group goal-setting conferences.

Before they were assigned to treatment groups, all students completed a self-assessment form on which they rated themselves on a set of 20 behaviors. Teachers from each Unit, using a concensus method, also evaluated each student on the same set of 20 behaviors.

The principal and Unit leaders indicated that they considered the conferences to be highly effective motivational devices.

Schwenn, Elizabeth A., Sorenson, Juanita S., and Bavry, James. The effect of individual adult-child conferences on the independent reading of elementary school children. Technical Report No. 125. x + 18 pp. March 1970.

This study was conducted to determine the effectiveness of individual adult-child conferences in increasing the independent reading of elementary school children. During an 8-week baseline period, data on the number and difficulty level of books read by students in three grades (2, 4, and 6) were gathered. Only students who ranked in the lower two-thirds on this measure were included in the sample. Students were stratified into two reading achievement levels (high, low).

Although the conferences significantly increased the amount of the children's independent reading, they had little effect on the difficulty level of their reading. Nor did the conference condition produce a differential gain in reading achievement. The lack of effect of the conferences on achievement-test scores was probably due to the relative brevity of the experimental period.

In Preparation

Davidson, Robert E., Schwenn, Elizabeth A., and Adams, Janice Freeman. Sentence characteristics and transfer in the facilitation of learning: First experiments. Technical Report.

Houston, Tom. Comparable common factors in homophone recognition. Technical Report.

THEORETICAL PAPERS

Completed Publications

Bourne, Lyle C., Jr. Concept learning and thought. Theoretical Paper No. 7. viii + 16 pp. January 1967.

This paper outlines the need for an explanation of behavior to account for its obvious generative and recursive character. The place of thinking as a concept in psychology is discussed.

WORKING PAPERS

Completed Publications

Frayer, Dorothy A., Fredrick, Wayne C., and Klausmeier, Herbert J. A schema for testing the level of concept mastery. Working Paper No. 16. vii + 26 pp. April 1969.

Classroom concept learning research requires the development of a measuring instrument which tests both nonverbal and verbal aspects of concept learning, permits differentiation of various aspects of concept mastery, and is applicable to various types of concepts. This schema consists of 13 behaviors from which concept learning may be inferred.

Davidson, Robert E. A research program in the semantic components of concept learning. Working Paper No. 25. ix + 20 pp. October 1969.

Two representative experiments are reported which indicate that the research strategy is a viable one. For example, it was demonstrated that children's learning can be greatly facilitated by the use of rational (prepositional) phrases. Learning score distributions between facilitated and nonfacilitated children showed almost no overlap.

Schwenn, Elizabeth A. and Sorenson, Juanita S. Individual conferences in reading: A planning guide. Working Paper No. 30. vii + 6 pp. October 1969.

This guide is intended for principals, Unit leaders, teachers, or others directing the implementation of reading conferences and accompanies Practical Paper No. 8 and a video tape, The Individual Conference: A motivational device for increasing independent reading in the elementary grades.

Klausmeier, Herbert J. and Frayer, Dorothy A. Cognitive operations in concept learning. Working Paper No. 36. viii + 46 pp. March 1970.

Lamal, Peter A. A preliminary study of tutorial procedures in the elementary school. Working Paper No. 39. x + 88 pp. July 1970.

PRACTICAL PAPERS

Completed Publications

Sorenson, Juanita S., Schwenn, Elizabeth A., and Klausmeier, Herbert J. The individual conference--A motivational device for increasing independent reading in the elementary grades. Practical Paper No. 8. x + 44 pp. October 1969.

The purpose of this paper is to describe in detail the implementation of individual adult-child conferences to increase independent reading. Implementation procedures evolved from research experience with elementary school children over a 3-year period. The development of this motivational procedure and others has grown out of an attempt by the Wisconsin Research and Development Center to develop a system of individually guided education.

Klausmeier, Herbert J., Schwenn, Elizabeth A., and Lamal, Peter A. A system of individually guided motivation. Practical Paper No. 9. x + 30 pp. January 1970.

In the system of motivation, the child's entering characteristics are assessed, motivational objectives in the form of desired behaviors are set for each child, a program designed to generate and maintain a desired level of motivation for each child is carried out, and finally the child's motivational progress is assessed. The motivational activities are usually directly tied to the instructional program in various curriculum areas and include large-group, class-size group, and one-to-one activities.

BOOKS

Completed Publications

Klausmeier, H. J. & Harris, C. W. (Eds.) Analysis of Concept Learning. (Second Printing.) Academic Press, Inc.: New York, 1968. 272 pp.

Project 102
(Phase 2)

Title: Motivation and Individual Differences in Learning and Retention

Principal Investigator:
Frank H. Farley, Associate Professor of Educational Psychology

TECHNICAL REPORTS

Completed Publications

Farley, Frank H. Memory storage in free learning as a function of arousal and time with homogeneous and heterogenous lists. Technical Report No. 87. vii + 8 pp. June 1969. ED 035 957.

The relation of arousal to retention in free learning was studied. Contrary to previous paired-associate studies, no significant interaction between arousal condition and retention interval was obtained, nor was reminiscence detected. The high-arousal material demonstrated greater resistance to forgetting than the low-arousal material.

Haveman, Jacqueline E. and Farley, Frank H. Arousal and retention in paired-associate, serial, and free learning. Technical Report No. 91. ix + 18 pp. July 1969. (Out of print.) ED 035 959.

In an effort to investigate the relationships of arousal and long-term recall, arousal was manipulated by white noise during paired-associate, serial, and free learning in three experiments. The results suggested that the effects of arousal are dependent on the nature of the material to be processed and the intensity of arousal.

Farley, Frank H. and Manske, Mary. The relationship of individual differences in the orienting response to complex learning in kindergartners. Technical Report No. 132. viii + 10 pp. July 1970.

The present study investigated an assumption that individual differences in magnitude of the orienting response (OR) to a non-signal tone, measured by heart-rate (HR) deceleration, is predictive of performance in a highly unrelated learning situation. The study employed Kindergartne-aged subjects of both sexes classified into High, Medium, and Low Orienting Response categories.

It was concluded that this method holds promise where learning is concerned as an exceedingly early non-verbal predictor that should be free of race and social class influences.

In Preparation

Berkowitz, Gloria. Individual differences in the orienting responses as related to reading readiness and early linguistic skills. Technical Report.

Lovejoy, Marcia A. and Farley, Frank H. The relationship of arousal during learning to short- and long-term retention employing two indices of arousal. Technical Report.

Jones, Mary C. and Farley, Frank H. Short- and long-term retention as a function of stimulus and response interestingness. Technical Report.

Manske, Mary E. and Farley, Frank H. Individual differences in the orienting response and arousal as factors in the short- and long-term retention of children in grades K-4. Technical Report.

Kumar, V. K. and Farley, Frank H. Influence of temperal parameters and intensity of post-learning arousal change on long-term retention. Technical Report.

Severson, H. H. & Farley, F. H. The identification of individual differences in strength of the nervous system. Technical Report.

WORKING PAPERS

Completed Publication

Farley, Frank H. and Severson, Herbert H. The stability of individual differences in "strength" and "sensitivity" of the nervous system. Working Paper No. 34. vii + 11 pp. February 1970.

The stability over 1 month of representative measures of strength ("modified shape of the curve") and sensitivity (absolute visual threshold--AVT) of the nervous system as determined from the research and theory of Teplov and associates at the University of Moscow was estimated on 15 Ss. The stability estimate for the "modified shape of the curve" measure was .61 ($p < .02$) while that for the AVT was .91 ($p < .001$). The results were discussed in regard to the Russian factor analytic identification of a dimension of strength, and in relation to the choice of strength measures for further research. A multiple-indices approach was recommended.

In Preparation

Farley, Frank H. and Osborne, John W. The reliability and validity of salivation as a measure of individual differences in arousal. Working Paper.

Scott, Joseph E. and Farley, Frank H. Arousal and cognitive style. Working Paper.

Project 103

Title: Task and Training Variables in Human Problem Solving and Creative Thinking

Principal Investigator:
Gary A. Davis, Associate Professor of Educational Psychology

TECHNICAL REPORTS

Completed Publications

Davis, Gary A., Train, Alice J., and Manske, Mary E. Trial and error vs. "insightful" problem solving: Effects of distraction, additional response alternatives, and longer response chains. Technical Report No. 26. ix + 10 pp. May 1967. ED 013 982.

This report is an extension of Professor Davis's earlier investigations of important pretraining variables which critically influence performance in human problem solving. The task used is a switch-light problem in which the subject attempts to achieve a particular pattern of lights in a matrix by manipulating switches on a response panel.

Freiheit, Susan Gretchen. The effects of a training program upon the creative performance of fourth-grade children. Technical Report No. 79. xi + 114 pp. February 1969. ED 036 045.

Two groups of Fourth-Grade pupils, one experimental and one control, totaling 45 subjects, provided the population of the study. Both groups were pretested and posttested with the Torrance Tests of Creative Thinking.

Davis, Gary A., Roweton, William E., Train, Alice J., Warren, Thomas F., and Houtman, Susan E. Laboratory studies of creative thinking techniques: The checklist and morphological synthesis methods. Technical Report No. 94. ix + 24 pp. September 1969. ED 036 957.

The main purpose of six experiments was to demonstrate that using idea checklists, a standard and intuitively appealing creative thinking technique, will increase idea quality and quantity. College students were allowed 10 minutes, 20 minutes, or (in one experiment) unlimited time to find ideas for "product improvement" problems.

Davis, Gary A., Houtman, Susan E., Warren, Thomas F., and Roweton, William E. A program for training creative thinking: I. Preliminary field test. Technical Report No. 104. ix + 19 pp. November 1969. ED 036 019.

A three-part model conceptualiziang the components of "creativity" as (1) appropriate creative attitudes, (2) various cognitive abilities, and (3) idea-generating techniques, suggests a structured approach for improving creative thinking.

THEORETICAL PAPERS

Completed Publications

Davis, Gary A. The current status of research and theory in human problem solving. Occasional Paper No. 2. viii + 24 pp. June 1966 (Out of print.) ED 010 506.

Problem-solving theories in three areas are summarized: traditional learning, cognitive-Gestalt approaches, and more recent computer and mathematical models of problem solving. Recent empirical studies are categorized according to the type of behavior elicited by the task: covert trial-and-error behavior or overt trial-and-error behavior. The review extends from January 1960 to June 1965.

Davis, Gary A., Manske, Mary E., and Train, Alice J. Training creative thinking. Occasional Paper No. 6. viii + 20 pp. January 1967. (Out of print.)

Method and orientations for stimulating creative thinking in the fields of industry, education, and psychology are reviewed. The review extends from January 1958 to July 1966.

Roweton, William E. Creativity: A review of theory and research. Theoretical Paper No. 24. May 1970.

Creative behavior is a rapidly expanding interest area. In the present review, various theoretical interpretations or "explanations" of creative thinking are classified into five major categories: (1) definitional approaches; (2) dispositional or personality based theories; (3) psychoanalytic viewpoints; (4) behavioristic theories; and (5) operational approaches.

Project 104

Title: Basic Pre-Reading Skills: Identification and Improvement

Principal Investigator:
Richard L. Venezky, Assistant Professor of English and of Computer Sciences

TECHNICAL REPORTS

Completed Publications

Calfee, Robert C. and Venezky, Richard L. Component skills in beginning reading. Technical Report No. 60. ix + 14 pp. July 1968.

This paper raises the question: What skills are required by current reading tests? The makeup of test items is such that ability to follow instructions and general language competence are common factors which enter significantly into performance on all subtests. The task of constructing tests to identify separable skills in language and intelligence is possible but difficult.

Goldring, Susan L. The effect of presentation and test mode on short-term retention of words. Technical Report No. 68. vii + 17 pp. January 1969.

This experiment employed Sternberg's procedure to investigate the effects of presentation and test modalities (auditory or visual), and number of presentations of the processing rate of monosyllabic words of varying graphemic and phonemic length. 20 college students and 20 Sixth Graders served as Ss. Each S recieved all conditions and lists in a 10 x 10 Graeco-Latin square design.

Calfee, Robert C., Venezky, Richard L., and Chapman, Robin S. Pronunciation of synthetic words with predictable and unpredictable letter-sound correspondences. Technical Report No. 71. vii + 15 pp. February 1969.

A list of synthetic words was prepared for testing the pronunciation of predictable patterns, unpredictable patterns, and miscellaneous spellings. Participating in the study were Third and Sixth Graders from two elementary schools, Eleventh Graders, and college students.

Skeel, Mary H., Calfee, Robert C., and Venezky, Richard L. Perceptual confusions among fricatives in preschool children. Technical Report No. 73. vii + 11 pp. February 1969. ED 036 789.

This study examined perceptual and articulatory confusions among the fricatives / f, v, s, z, θ, ð / in preschool children. These phonemes were selected because they are among the most difficult for children to articulate. Seventeen children between 3.3 and 5.1 years old were tested on syllables formed by taking all combinations of the 6 fricatives in initial (CV) and final (VC) position with one of the vowels / a, i, aɪ /. Discrimination and articulation tests of this syllable set were then administered.

Calfee, Robert C. Short-term retention in normal and retarded children as a function of memory load and list structure. Technical Report No. 75. ix + 25 pp. February 1969. ED 031 831.

Studies of recall and recognition short-term memory (STM) were reviewed and a series of studies of serial recognition memory of normal and retarded children was described. From experiments using a recall procedure it was concluded that important variables affecting adult performance also had comparable effects on normal and retarded children. Except for response biases and forgetting rate, recognition memory processes of normal and retarded children appeared to be identical to those of adults.

Rudegeair, Robert E., and Kamil, Michael L. Assessment of Phonological discrimination in children. Technical Report No. 118. ix + 17 pp. March 1970.

A review of the literature led the present investigators to conclude that conventional tests are inadequate for accurate assessment of phonological discrimination ability in children. To reduce task difficulty, the present investigators developed repeated contrast test pairs. Such pairs consist of CVC syllables in which the same phonemic contrast occurs twice (e.g., /bob/ - /dod/).

The results have two major implications: First, repeated testing is a necessity for young children. Second, repeated contrast pairs may provide a means of obtaining a more complete assessment of phonological discrimination ability in children.

Kamil, Michael L. Memory for parallel structure and repeated items in compound sentences and digit, letter, and word strings. Technical Report No. 119. x + 95 pp. March 1970.

Five experiments were conducted to answer two major questions with regard to short-term memory for sentences: First, what are the differences in encoding processes in short-term memory for natural language materials compared with non-linguistic material?

The significance of the findings is that they point to a general short-term memory encoding strategy for compound sentences and digits, letter, and word strings with compound structures.

Ting, Aichen, Venezky, Richard L., Chapman, Robin S., and Calfee, Robert C. Phonetic transcription: A study of transcriber variation. Technical Report No. 122. ix + 18 pp. March 1970.

This study examined variation in transcriber disagreement as a function of transcriber's linguistic background, the transcription task, and the nature of judgment involved. Three linguistics students trained in phonetic transcription, one a non-native speaker of English, listened to the same tapes of Midwestern Kindergartners pronouncing lists of common words.

The judgment of whether or not a sound in a word was mispronounced produced some disagreement; of a particular transcription for a sound thought to be in error by both transcribers.

Naeser, Margaret A. Criteria for the segmentation of vowels on duplex-oscillograms. Technical Report No. 124.

This paper develops criteria for the segmentation of vowels on duplex oscillograms. Previous vowel duration studies have primarily used sound spectrograms. The use of duplex oscillograms, rather than sound spectrograms, permits faster production (real time) at less expense (adding machine paper may be used).

Naeser, Margaret A. Influence of initial and final consonants on vowel duration in CVC syllables. Technical Report No. 130. x + 18 pp. June 1970.

Calfee, Richard C., Chapman, Robin S., and Venezky, Richard L. How a child needs to think to learn to read. Technical Report No. 131. x + 42 pp. July 1970.

Johnson, Dale and Venezky, Richard L. An instrument for testing pronunciations of vowel clusters. Part I: Linguistic background. Technical Report No. 137. x + 30 pp. July 1970.

THEORETICAL PAPERS

Completed Publications

Calfee, Robert C. The role of mathematical models in optimizing instruction. Theoretical Paper No. 17. vii + 27 pp. March 1969. (Out of print.)

With the advent of computers in the classroom, the decision structure implicit in the teaching process has been obvious. Given a descriptive model of the learning process, it is in some cases possible to derive optimal conditions for instruction.

WORKING PAPERS

Completed Publications

Venezky, Richard L., Calfee, Robert C., and Chapman, Robin S. Skills required for learning to read: A preliminary analysis. Working Paper No. 10. vii + 18 pp. September 1968.

Three classes of skills required in the initial stages of learning to read are task skills, oral language skills, and letter-sound decoding skills. In this paper, competence in these skill areas is discussed in relation to training and testing to instruction and assessment.

Venezky, Richard L. Linguistics and spelling. Working Paper No. 15. vii + 16 pp. April 1969.

The linguist can provide for educators data on the pronunciation of a language; however, as a linguist, he cannot decide if and how they should be deployed in the teaching of spelling.

Kamil, Michael L. Effects of parallel syntactic structures on immediate recall of compound sentences. Working Paper No. 19. viii + 19 pp. May 1969.

Phase-structural variables have been shown to affect performance of Ss in handling sentences in a variety of psychological tasks. The present experiment was designed to point out another variable that substantially affects children's performance in immediate recall of sentences.

Sixty Ss with a mean age of 6 years and 9 months were each given one of the sets interspersed with 12 irrelevant sentences. Subjects were asked to repeat each sentence immediately after its presentation. The dependent variable was the number of words correctly repeated. Recall was found to increase significantly with increases in the Parallel Index. Two linguistic processing mechanisms were discussed as possible explanations for the results.

Venezky, Richard L., and Calfee, Robert C. Models for the reading process. Working Paper No. 38. vii + 39 pp. June 1970.

A model for the reading process is proposed which includes high-speed visual scanning, dual processing, and searching for the largest manageable units (LMU). During reading, two processes take place in parallel: syntactic-semantic integration of what has just been scanned and forward scanning to locate the next LMU.

Implicit in this model are several hypotheses about reading. Procedures are suggested for testing these and other components of the model.

Working Papers in Preparation:

Venezky, Richard L. Non-standard language and reasoning. Working Paper.

Project 107

Title: Role Theory Analysis of Peer-Teaching Techniques
(Formerly: Peer Group Pressures on Learning)

Principal Investigator:
Vernon L. Allen, Associate Professor of Psychology

TECHNICAL REPORTS

Completed Publications

Allen, Vernon L. and Bragg, Barry W. Effect of group pressure on memory. Technical Report No. 30. viii + 12 pp. January 1968. ED 016 600.

The effect of group pressure on the retention of previously learned material was investigated with a paired-associates task. Subjects received correct feedback, incorrect feedback, or no feedback, either from one person or from a group.

Allen, Vernon L. and Bragg, Barry W. Effect of social pressure on concept identification. Technical Report No. 31. viii + 10 pp. January 1968. ED 016 597.

Unanimous group feedback, correct or incorrect, was utilized to study the effect of feedback on concept identification and the transfer of its effect to a second concept identification problem.

Allen, Vernon L. and Levine, John M. Creativity and conformity. Technical Report No. 33. viii + 12 pp. November 1967. ED 019 747.

Conformity in group pressure was compared for 76 Fifth-Grade Ss who received creativity training and for 88 matched controls.

Allen, Vernon L. and Levine, John M. Consensus and conformity. Technical Report No. 41. vii + 11 pp. January 1968. ED 020 552.

Two methods of breaking group consensus are employed in this study. Professor Allen measures the effects on the responses of college subjects to both objective and subjective stimuli. The results suggest the need for modification of existing theories of conformity behavior. In addition, these results emphasize the differences in conformity of males and females.

Allen, Vernon L. and Levine, John M. Social support and conformity: The effect of differentiation from the group and order of responding. Technical Report No. 72. vii + 8 pp. January 1969.

Directed toward the identification of the effects of peer group pressures on the utilization of concepts already learned and on the learning of new concepts, two variables relevant to explaining the social support phenomenon were investigated. Possible mechanisms underlying the position and contact effects were discussed.

Allen, Vernon L. and Levine, John M. Social support and conformity: The role of independent assessment of reality. Technical Report No. 83. ix + 31 pp. April 1969. ED 035 955.

This study investigated the role of one factor in the dramatic conformity reduction produced by a partner who agrees with S in the face of group pressure--the independent assessment of social and physical reality provided by the partner is crucial to the efficacy of social support in reducing conformity.

Allen, Vernon L. and Newtson, Darren. Conformity, anticonformity, and independence. Technical Report No. 88. ix + 21 pp. June 1969. ED 035 951.

The present studies tested the hypothesis that a social supporter with negative task-related characteristics would be less effective in reducing conformity in a group pressure situation than a social supporter without such negative characteristics. The hypothesis was tested in a standard Crutchfield simulated group.

Bragg, Barry W. and Allen, Vernon L. Ordinal position and conformity. Technical Report No. 95. vii + 9 pp. September 1969. ED 035 960.

The role-modeling theory was applied to the problem of birth-order and conformity to a same-sex peer group. Subjects were male and female college students from two-sibling families. The pattern of results for conformity was congruent with predictions made from role-modeling theory.

Allen, Vernon L. and Boyanowsky, Ehor O. Generalization of independence produced by social support. Technical Report No. 109. vii + 15 pp. December 1969.

The present study was conducted to determine whether independence produced by social support provided on one type of item in a group-pressure situation would generalize to a different item on which the subject was opposed by a concensual group.

Subjects were 180 female undergraduates who were tested in groups using a Crutchfield kind of apparatus. Results showed that social support, i.e., the presence of a partner answering immediately prior to the subject, significantly reduced conformity on both visual and opinion items.

Generalization of independence from social support to concensual group trials was not obtained.

THEORETICAL PAPERS

Completed Publications

Levine, John M. and Allen, Vernon L. Reactions to attitudinal deviancy. Theoretical Paper No. 14. vii + 16 pp. November 1968.

This analysis of social influences on human learning presents a critical review of empirical and theoretical treatments of group reaction to attitudinal deviancy. Data are presented which indicate that individuals who deviate in non-attitudinal spheres are not always rejected. In some settings, they are not only tolerated but also encouraged.

Project 111

Title: Structure of Concept Attainment Abilities

Principal Investigators:
Robert Davidson, Assistant Professor of Educational Psychology
Herbert J. Klausmeier, V. A. C. Henmon Professor of Educational Psychology
Thomas A. Romberg, Assistant Professor of Mathematics and of Curriculum and Instruction
B. Robert Tabachnick, Chairman, Department of Curriculum and Instruction
Alan Voelker, Assistant Professor of Science Education
Lester S. Golub, Associate Professor of English
Margaret Harris, Research Associate, Project Manager

TECHNICAL REPORT

Robinson, Pamela E. Two Fifth Grade Measures of Cognitive Abilities. Technical Report No. 135. x + 94 pp. June 1970.

WORKING PAPER

In Preparation

Golub, Lester, Fredrick, Wayne, Harris, Margaret L., and Klausmeier, Herbert J. The sampling, logical analysis, and test items for 30 concepts in 4th grade language arts. Working Paper.

PROGRAM 2

PROCESSES AND PROGRAMS OF INSTRUCTION

Project 201

Title: Individually Guided Elementary Mathematics
Phase 1, Patterns in Arithmetic

Principal Investigators:
Henry Van Engen, Professor of Mathematics Education
Thomas A. Romberg, Assistant Professor of Mathematics of Curriculum and Instruction

TECHNICAL REPORTS

Completed Publications

Van Engen, Henry and Steffe, Leslie P. First-grade children's concept of addition of natural numbers. Technical Report No. 5. x + 14 pp. February 1966. (Out of print.) ED 010 508.

A concern with relationships among variables pertaining to learners and a particular subject matter--arithmetic--prompted the study described in this report. Specifically, relationships of sex and IQ level to the acquisition of the concept of addition and of conservation of numerousness were ascertained.

Boe, Barbara L. Secondary school pupils' perception of the plane sections of selected solid figures. Technical Report No. 13. x + 34 pp. November 1966. ED 010 515.

Seventy-two subjects representing three ability levels in each of Grades 8, 10, and 12 were individually given two tests, differing only in mode of response, of geometric sections resulting from four cuts hypothetically performed on each of four solid figures. Sex, grade, ability level, and sequence of tasks were used in the analysis of responses to the two tests.

Steffe, Leslie P. The performance of first-grade children in four levels of conservation of numerousness and three IQ groups when solving arithmetic addition problems. Technical Report No. 14. xii + 58 pp. December 1966. (Out of print.) ED 016 535.

By using a test of conservation of numerousness he developed, the author was able to separate First-Grade children in each of three IQ groups into four levels of conservation of numerousness. All the children took an arithmetic problem-solving test, the latter including variables of a described transformation versus no described transformation and of no aids, pictorial aids, and physical aids.

Steffe, Leslie P. The effects of two variables on the problem-solving abilities of first-grade children. Technical Report No. 21. x + 18 pp. April 1967. (Out of print.) ED 019 113.

In the reported research, Fifth Grade children using three different arithmetic programs were individually tested on addition problems. Half of the problems each child received had different names for the sets to be combined and for the total set; half of the children received problems preceded by a quantifier.

Harper, E. Harold and Steffe, Leslie P. The effects of selected experiences on the ability of kindergarten and first-grade children to conserve numerousness. Technical Report No. 38. ix + 45 pp. February 1968. (Out of print.) ED 021 752.

This study tests the effects of a sequence of twelve lessons on the ability of Kindergarten and First Grade children to recognize and conserve numerousness. Two pretests were administered to each grade level.

Steffe, Leslie and Parr, Robert B. The development of the concepts of ratio and fraction in the fourth, fifth, and sixth years of elementary schools. Technical Report No. 49. xi + 43 pp. March 1968. (Out of print.) ED 023 612.

Six tests were constructed, four on a pictorial level and two on a symbolic level, to measure the performance of children, in three different ability groups, on problems which may be classified as ratios or fractions. The authors suggest a number of steps that may be taken to develop appropriate abilities in children.

Braswell, James S. and Romberg, Thomas A. Objectives of Patterns in Arithmetic and evaluation of the telecourse for grades 1 and 3. Technical Report No. 67. ix + 78 pp. January 1969.

Part One of this report discusses the background and philosophy of the Patterns In Arithemtic (PIA) TV program. Part Two presents the results of a summative noncomparative evaluation done on PIA in Grades 1 and 3 during the 1966-67 school year.

Braswell, James S. The formative evaluation of Patterns In Arithmetic--Grade 6, using item sampling Parts I, II,and III. Technical Report No. 113. xii + 237 pp. March 1970.

The major goal of this study was to determine whether the technique of "item-sampling" could be incorporated into a design effective for formative curriculum evaluation. Three sub-goals were (1) To explore the practical relationship between the population and item parameters (2) To discuss ways formative curriculum evaluation can be used and (3) To suggest advantages item-sampling has over traditional achievement testing.

In Preparation

Parr, Robert. Terminal report from the PIA project. Technical Report.

WORKING PAPERS

Completed Publications

Braswell, James. Patterns in Arithmetic, Grade 2: Field testing 1967-68. Working Paper No. 17. v + 20 pp. May 1969. (Out of print.)

This report is of a modest, summative evaluation done on Patterns in Arithmetic, Grade 2. Thirty classes representing three states formed the study group. Pre- and post-standardized achievement tests were used along with a detailed questionnaire. The classes participating in the study came from medium- to large-sized cities and represented a wide range of abilities. The post-test results clearly indicate that the PIA study group exceeded performance by norms population at the end of Grade 2. This,combined with the fact that the PIA group was slightly below norms at the beginning of Grade 2, lends additional support to the effectiveness of the Patterns program.

Braswell, James. Formative evaluation of Patterns in Arithmetic, Grade 5, 1967-68. Working Paper No. 18. vii + 90 pp. June 1969. (Out of print.)

This paper presents the results of testing during the developmental year of Patterns in Arithmetic (PIA), Grade 5. Results on the end-of-year tests indicate PIA-5 participants have learned traditional computation skills and important concepts in arithmetic that are commensurate with their stage of development. Moreover, certain non-traditional material, particularly in geometry, was well recieved and tested out satisfactorily. Computation problems tended to be easier at the end of the year than at the testing period immediately following the period of topic coverage. This shows that skills learned early in the year are not forgotten but reinforced by the structure of the Pupil Exercises. Instruments used in the testing program were constructed by the PIA staff and a few items were borrowed from existing standardized instruments.

Irwin, Michael and Walter, James. A comprehensive look at Patterns in Arithmetic. Working Paper No. 20. v + 43 pp. April 1969. (Out of print.)

The PIA TV Series was born of the realization that few programs or materials existed before 1960 to assist learners or teachers in use of new concepts, especially at the elementary level.

Project 201

Title: Individually Guided Elementary Mathematics
Phase 2, Analysis of Mathematics Instruction

Principal Investigators:
Thomas A. Romberg, Assistant Professor of Mathematics and of Curriculum and Instruction
John Harvey, Associate Professor of Mathematics and of Curriculum and Instruction

TECHNICAL REPORTS

Completed Publications

Scott, Joseph A. The effect of selected training experiences on performance on a test of conservation of numerousness. Technical Report No. 92. ix + 65 pp. July 1969. ED 036 334.

Eleven lessons were presented to Kindergartners in an attempt to train them to identify properties of objects. It was concluded that such children can with little difficulty be taught to identify, discriminate, and label properties of objects and of sets of objects.

Sowder, Larry. Discovery learning: A status study, Grades 4-7, and an examination of the influence of verbalizing mode on retention. Technical Report No. 99. xv + 140 pp. July 1969. ED 035 593.

Aims of this study were two-fold: (1) to explore the ability of pupils to give operational evidence of generalizing in selected numerical situations, and (2) to study the effects of differing manners of verbalizing a generalization on the retention of the ability to use the generalizations.

Fennema, Elizabeth H. A study of the relative effectiveness of a meaningful concrete and a meaningful symbolic mode in learning a selected mathematical principle. Technical Report No. 101. xiii + 192 pp. July 1969. ED 036 444.

The purpose of this study was to determine the relative effectiveness of a meaningful concrete and a meaningful symbolic model in learning a selected mathematical principle. Subjects were from a Second Grade population.

Gilbert, Lynn Ellen. An introduction of length concepts to Kindergarten children. Technical Report No. 102. ix + 92 pp. July 1969. ED 036 335.

This study was an attempt to explain mathematically the concept of length to Kindergartners Conservation of length is generally not achieved, according to Piaget, until the age of 7 or 8.

Shepler, Jack Lee. A study of parts of the development of a unit in probability and statistics for the elementary school. Technical Report No. 105. xi + 409 pp. November 1969.

The behavioral objectives for a unit of instruction in probability and statistics for Sixth-Grade students and the order in which objectives would be taught were determined. An instructional analysis of the unit was undertaken to select or develop materials and procedures for teaching the unit.

King, Irvin Leon. A formative development of a unit on proof for use in the elementary school. Technical Report No. 111.

To test the feasibility of presenting proof materials to college-capable Sixth Grade students, a unit on mathematical proof was developed using an iterative procedure. Formative evaluation procedures were used to improve various components of the unit. The iterative developmental procedures employed in developing the unit were highly successful; Sixth Grade students are able to understand and prove the mathematical proofs as presented in the Unit.

Meyer, Rochelle Wilson. The identification and encouragement of mathematical creativity in first grade students. Technical Report No. 112.

One set of conditions conducive to mathematical creativity was proposed and activities which satisfy these conditions were piloted. From these activities both an instructional program to encourage individual mathematical creativity in First Grade students and two problems to use a part of the test instrument were developed. An experiment was conducted to determine the effects of participation in the program on observable mathematical creativity. The effects on general creativity were measured using the Torrance Tests of Creative Thinking, Figural Forms A and B. Evidence revealed that under suitable conditions, First Grade students can exhibit behaviors satisfying these criteria.

Shepler, Jack L. An exploratory study of the interaction of three elementary concepts of probability with stimuli, socioeconomic, grade, and IQ differences. Technical Report No. 114.

This status study probides evidence supporting the feasibility of teaching certain probability concepts to at least 30 Fifth and Sixth Grade students. The study employed an interview technique to analyze the status of three basic concepts of probability (sample space, probability of an event, choosing the most (equally) likely of two events) and measured the effects of visual aids on the child's ability to solve problems involving these concepts.

Romberg, Thomas A., Shepler, Jack L., and Wilson, James W. Three experiments involving probability measurement procedures with mathematics test items. Technical Report No. 129.

In Preparation

Romberg, Thomas A., and Shepler, Jack L. Mastery learning and retention. Technical Report.

WORKING PAPERS

Completed Publications

Romberg, Thomas A., Fletcher, Harold J., and Scott, Joseph A. A measurement approach to elementary mathematics instruction. Working Paper No. 12. v + 8 pp December 1968. (Out of print.)

The problem attacked in this project is to design an instructional system to facilitate the interaction of children with mathematics.

Romberg, Thomas A. and Harvey, John G. Developing mathematical processes: Background and projections. Working Paper No. 14. v + 24 pp. April 1969.

Preliminary activities in this paper include identifying instructional objectives, student activities, materials, and assessment procedures for integration into a total mathematics curriculum.

Romberg, Thomas A. and Roweton, Marilyn. Pilot developmental activities in elementary mathematics conducted at Hugel School, Madison, Wisconsin 1967-68. Working Paper No. 24. vii + 41 pp. October 1969

Two instructional units were developed for kindergarten and five units for first year. Each instructional unit is described in this paper. An explanation of evaluation procedures and a report of the results of each evaluation is given.

Harvey, John G., Meyer, Rochelle W., Fletcher, Harold J., and Romberg, Thomas A. The content of geometry for the elementary school. Working Paper No. 28. vii + 19 pp. December 1969.

A rationale for including geometry in the elementary school mathematics curriculum is developed. The content outline lists topics separately for three levels--K-2, 3-4, and 5-6--in each of five areas--location geometry, nonmetric geometry, metric geometry, transformational geometry, and geometric problem solving.

Romberg, Thomas A. and Gornowicz, Carolyn. Developing mathematical processes: Prototypic tryout of materials for Kindergarten children at Ray C. Huegel Elementary School in Madison, Wisconsin 1968-69. Working Paper No. 32. ix + 24 pp. February 1970.

This paper summarizes the developmental activities in mathematics conducted in Kindergarten at Ray W. Huegel School, Madison, Wisconsin, during the 1968-69 school year. One instructional unit of Developing Mathematical Processes was taught for Kindergarten.

In Preparation

Benzinger, Thomas. The effects of instruction on the development of the concept of conservation of numerousness by Kindergarten children. Working Paper.

Romberg, Thomas A. and Planert, Diane. Developing mathematical processes: Pilot tryout of materials for first grade children, Huegel School, 1968-69, Madison, Wisconsin. Working paper.

Romberg, Thomas A. and Planert, Diane. Developing mathematical processes: Pilot tryout of materials for second grade children, Huegel School, 1968-69, Madison, Wisconsin. Working Paper.

Webb, Joan Moscovitch. Hello from Merrie England. Working Paper.

Project 201

Title: Individually Guided Elementary Mathematics
Phase 3, Prototypic System of Computer-Managed Mathematics Instruction

Principal Investigator:
M. Vere Devault, Professor of Curriculum and Instruction

TECHNICAL REPORTS

Completed Publications

Kriewall, Thomas E. Applications of information theory and acceptance sampling principles to the management of mathematics instruction. Technical Report No. 103. xv + 285 pp. October 1969. (Out of print.)

This publication treats several problems of instructional management encountered in situations which emphasize self-selection and self-pacing principles. Primarily, these problems deal with the efficient utilization of available resources to create an operational, individualized, inquiry-learning environment.

Project 203

Title: Prototypic Instructional Systems: Elementary Science

Principal Investigators:
Milton O. Pella, Professor of Science Education
Alan M. Voelker, Assistant Professor of Science Education

TECHNICAL REPORTS

Completed Publications

Pella, Milton O. and Ziegler, Robert E. The use of static and dynamic models in teaching aspects of the theoretical concept the particle nature of matter. Technical Report No. 20. xiv + 50 pp. March 1967. (Out of print.) ED 013 205.

Through the use of mechanical models a basic concept of science, the particle nature of matter, was effectively taught to children in Grades 2-6. The relationships of IQ, grade level, age, and past achievement in science and mathematics were ascertained through analysis of responses to eight test demonstrations given after instruction.

Carey, Russell L. Relationship between levels of maturity and levels of understanding of selected concepts of the particle nature of matter. Technical Report No. 36. xv + 68 pp. January 1968. (Out of print.) ED 020 131.

The purpose of this study was to determine the relative levels of understanding of certain concepts achieved by pupils in Grades 2-5. Sixteen concepts were selected and ordered with reference to the logic of the discipline.

Voelker, Alan M. The relative effectiveness of two methods of instruction in teaching the classificational concepts of physical and chemical change to elementary school children. Technical Report No. 39. ix + 39 pp. February 1968. ED 020 908.

Through teacher-directed demonstration-discussion, students in Grades 2-6 were instructed in the concepts of physical and chemical change; responsibility for formulating and stating the generalization for proper classification of the phenomena rested with the learner in one treatment and with the teacher in another.

Stauss, Nyles G. An investigation into the relationship between concept attainment and level of maturity. Technical Report No. 40. xiii + 65 pp. February 1968. ED 020 152.

The focus of this study was the identification of the concepts included within the conceptual scheme--the biological cell--most appropriate for study by children in Grades 2-6. The grades in which satisfactory mastery of 11 specific concepts is attained are outlined.

Triezenberg, Henry J. The use of an advance organizer in teaching selected concepts of ecological systems. Technical Report No. 42. ix + 43 pp. February 1968. ED 020 909.

Nine televised lessons on ecological systems were presented to students in Grades 7 and 9 following presentation of an organizer at three levels of abstraction--verbal, sketch, and mechanical model.

Helgeson, Stanley L. The relationship between concepts of force attained and maturity. Technical Report No. 43. xiii + 43 pp. March 1968. ED 020 910

Demonstration-discussion techniques were utilized to instruct pupils in Grades 2-6 in concepts related to the conceptual scheme of force. Lesson plans and tests utilized in this study are available in Practical Paper No. 4 of this Center.

Sherman, Jack E. The relative effectiveness of two methods of utilizing laboratory-type activities in teaching introductory physical science. Technical Report No. 65. ix + 29 pp. November 1968. (Out of print.)

This study was concerned with determining the relative effectiveness of a direct manipulative and an indirect nonmanipulative method of utilizing laboratory-type activities in teaching the course, Introductory Physical Science (IPS).

Boles, Ronald J. The feasibility of teaching biology via the sociohistorical approach. Technical Report No. 66. ix + 34 pp. November 1968.

The exploratory study described in this Technical Report was an attempt to determine the feasibility of teaching science concepts to high school students through instruction on the relationship of science and society or the social implications of science.

Swartney, Ilene Joyce. Learning difficulties encountered by students studying the CHEM Study program. Technical Report No. 77. ix + 101 pp. February 1969. (Out of print.) ED 036 445.

This study was designed to identify those science concepts and mathematical skills that may be the source of student difficulty in learning chemistry as described by the CHEMS program.

Roth, Robert E., Pella, Milton O., and Schoenfeld, Clay A. Environmental Management Concepts--A List. Technical Report No. 126. x + 72 pp. April 1970.

PRACTICAL PAPERS

Completed Publications

Carey, Russell L. Lesson plans and tests of knowledge, comprehension, and application for selected concepts of the conceptual scheme the particle nature of matter. Practical Paper No. 1. viii + 39 pp. January 1968.

These materials were developed for use in an empirical study to determine the relative levels of understanding of certain concepts, within the conceptual scheme, particle nature of matter, achieved by pupils in Grades 2-5.

Stauss, Nyles G. Materials used in teaching and evaluating the concepts related to the biological cell in Grades 2-6. Practical Paper No. 2. ix + 36 pp. January 1968. ED 020 152.

The focus of this study was the identification of the concepts included within the conceptual scheme--the biological cell--most appropriate for study by children in Grades 2-6. For an investigation into children's learning of these concepts, lessons and tests were developed.

Triezenberg, Henry J. Testing for concepts of ecological systems. Practical Paper No. 3. ix + 19 pp. January 1968. ED 020 906.

This paper contains a pretest on equilibirium and posttests of knowledge, comprehension, and application of concepts of ecological systems. The tests are a part of a study conducted at junior high school level.

Helgeson, Stanley L. Lesson plans and tests of knowledge, comprehension and application for instruction in concepts of force, Grades 2-6. Practical Paper No. 4. viii + 39 pp. March 1968. ED 020 907.

The study for which the lessons and tests in this Practical Paper were developed indicated that pupils in Grades 2-6 are able to learn, at varying levels of understanding, selected concepts of force.

In Preparation

Boles, Ronald J. Tests and materials used in teaching biology via the sociohistorical approach. Practical Paper.

Project 204

Title: Individually Guided Language Arts

Principal Investigators:
Wayne Otto, Professor of Curriculum and Instruction
Lester S. Golub, Associate Professor of English

TECHNICAL REPORTS

Completed Publications

Burmeister, Lou E. An evaluation of the inductive and deductive group approaches to teaching selected word analysis generalizations to disabled readers in eighth and ninth grades. Technical Report No. 12. x + 42 pp. November 1966. ED 010 514.

Following the identification of generalizations at approximately a 90% utility level applying to words above the primary level in difficulty, 2-week instructional plans prepared by the author were used in teaching. Scores on both oral and silent posttests were analyzed.

Weissglass, Roberta R. The effect of memory span on cue patterns in word recognition. Technical Report No. 16. xii + 16 pp. December 1966. ED 015 111.

The possible effect of memory span on the cue patterns of young children and the effectiveness of memory span tests as predictors of difficulty in learning to read are reported. Kindergarten children, screened by scores on the WISC Digit Span subtest, selected from a group of five-letter nonsense words the one most similar to a word just shown them. Analysis treated all five position cues.

Smith, Richard J. The effects of reading a short story for a creative purpose on student attitudes and writing. (Theodore J. Harris, Chairman of Thesis Committee) Technical Report No. 28. x + 30 pp. November 1967. ED 017 437.

Twelfth Graders in college preparatory English class completed either creative or non-creative writing tasks and responded to an inventory of attitudes relative to the stories and tasks were based on. Half of the students had previously received training on the two types of writing tasks. The analysis treated attitudes, effects of training, and cognitive level of written product.

Schotanus, Helen D. The relationship between difficulty of reading material and attitude toward reading. Technical Report No. 29. viii + 14 pp. January 1968. ED 016 596.

A comparison between instructional reading level and difficulty level of reading materials selected by Second Graders for enjoyment was made. Previously determined attitudes toward reading were related to difficulty of chosen materials.

Otto, Wayne and Rarick, G. Lawrence. Effect of time of transition from manuscript to cursive writing upon subsequent performance in handwriting, spelling and reading. Technical Report No. 47. viii + 11 pp. April 1968. (Out of print.) ED 016 575.

This study was designed to determine whether the handwriting, reading, and spelling performance of Fourth and Sixth Grade children is related to the time when the transition from manuscript to cursive writing is made.

Otto, Wayne and Cooper, Carin. Investigators of the role of selected cues in children's paired-associate learning. Technical Report No. 53. ix + 20 pp. May 1968. (Out of print.) ED 036 315.

Four studies in a series dealing with good and poor readers' utilization of selected cues in paired-associate learning are reported. Specific cues considered were color, order of presentation, and verbal mediators.

Koenke, Karl. The effects of a content-relevant picture on the comprehension of the main idea of a paragraph. Technical Report No. 56. ix + 34 pp. June 1968. (Out of print.) ED 024 540

The importance of content-relevant pictures to the comprehension of the main idea in a paragraph was investigated. Various reading conditions were constructed which contained a paragraph, a picture, or both, each with three types of instructions. In addition, the effects of readability of the paragraphs and grade placement of the students (Third and Sixth Grades) were examined.

Otto, Wayne and Barrett, Thomas C. Two studies of children's ability to formulate and state a literal main idea in reading. Technical Report No. 57. ix + 25 pp. June 1968. (Out of print.) ED 024 543.

This report deals with two studies which investigate the ability of young children to formulate and state the main idea in a paragraph. A substantial portion of the report is devoted to methodological matters: operational definition of main idea, appropriate reading materials, and a method for evaluating responses.

Tatham, Susan M. Reading comprehension of materials written with select oral language patterns: A study of Grades 2 and 5. Technical Report No. 86. ix + 142 pp. July 1969. ED 036 405.

To determine whether or not Second and Fourth Graders comprehend material written with oral language patterns that appear frequently in their speech better than material written with patterns that appear infrequently, two reading comprehension tests were devised.

Askov, Eunice Nicholson. Assessment of a system for individualizing reading instruction. Technical Report No. 117. xiii + 87 pp. March 1970.

This study was designed to assess the effects of using the Wisconsin Prototypic System of Reading Skill Development, an experimental program which emphasizes diagnosis of reading skill development and instruction geared to individual skill needs. Pupil attitudes toward recreational reading were compared considering grade and achievement level. Those areas most directly affected by the experimental treatment showed change--i.e., teachers' classroom procedures and attitudes toward individualized reading instruction.

Fredrick, Wayne, Golub, Lester S., and Johnson, Shelby L. Analysis of the "Linguistic Ability Test", Grades 4 and 6. Technical Report No. 121. ix + 35 pp. March 1970.

The The Linguistic Ability Test was designed, pilot tested, revised, and field tested in an attempt to measure the skills implied by psycholinguistic ability. The future importance of the LAT is projected, and the test, along with its planned revisions, is included in the report.

Peterson, Joe. Effects of sex of experimenter and sex of subject in first and fifth grade children's paired associate learning. Technical Report No. 136. x + 66 pp. June 1970.

THEORETICAL PAPERS

Completed Publications

Otto, Wayne. The relationship of reactive inhibition and school achievement: Theory, research, and implications. Theoretical Paper No. 4. vii + 8 pp. September 1966. ED 010 507.

Drawing on theory and existing research Professor Otto examines the relationship of reactive inhibition to achievement in the basic school subjects. Within an underlying assumption that at least the early stages of basic skill learning take place by operant conditioning, inhibitory potential may be a potent determiner of latter achievement.

Otto, Wayne, Askov, Eunice, and Houston, Camile. (Eds.) Reading and the culturally disadvantaged: Selected papers from the annual institute in reading. Theoretical Paper No. 10. vii + 20 pp. December 1967.

This paper includes talks by A. J. Harris and R. A. McMenemy and a discussion by Doris M. Cook and Ruth W. Baldwin. Certain ideas recurred, among them the recognition that the child from a deprived environment comes to school with several strikes against him and that attempts to help must come in preschool programs.

Otto, Wayne and Askov, Eunice. The role of color in learning and instruction. Theoretical Paper No. 12. vii + 10 pp. March 1968. (Out of print.) ED 021 697.

This paper reviews the existing research relating to the function of color in learning, examines the rationale for present applications of color in instructional materials and considers the implications regarding the use of color as an aid to learning.

PRACTICAL PAPERS

Completed Publications

Otto, Wayne. Overview of the Wisconsin Prototypic System of Reading Instruction in the Elementary School. Practical Paper No. 5. ix + 68 pp. August 1968. (Out of print.) Ed 024 541

This prototypic reading guide provides a framework for individually guided instruction in reading and is useful for individual diagnosis and for simplifying and guiding group procedures. (It is a revision of Working Paper No. 7.)

Ellison, Mary Lou. Compendium of reading materials and teaching techniques for the Wisconsin Prototypic System of Reading Instruction. Practical Paper No. 7. vii + 51 pp. February 1969.

The materials and techniques listed in the compendium were selected on the basis of practicality rather than a particular philosophy of reading instruction. At this stage of development the Compendium should be considered a prototype. It needs to be tested for its usability and practicality for teachers in an elementary school setting.

WORKING PAPERS

Completed Publications

Otto, Wayne and Ford, David. With the assistance of Eunice Nicholson. Materials for teaching adults to read. Working Paper No. 2. 46 pp. December 1966. ED 015 180.

Following a brief introduction which describes an extensive survey and review of the materials available for teaching illiterate adults to read, 23 basic reading programs for adults are described and evaluated through a 50-item check list. Five additional lists of supplementary materials and publications useful in literacy instruction follow the evaulation.

Otto, Wayne and Houston, Camille. Mechnical aids in the teaching of reading. Working Paper No. 3. 16 pp. January 1967. ED 015 190.

An overview of the functions of the primary types of reading instruction devices and of criticism and research related to their use is given. Prototypical devices of three types are reviewed--tachistoscopes, accelerators and pacers, and multimedia presentations. Photographs of 18 of the 22 devices reviewed are given.

Otto, Wayne, Saeman, Ruth, Houston, Camille, McMahn, Betty, and Wojtal, Patricia. Prototypic guide to reading skill development in the elementary school. Working Paper No. 7. ix + 44 pp. July 1967. (Out of print.) ED 016 573.

This guide is intended to serve as the nucleus for a comprehensive program of reading instruction in the elementary school by providing an explicit statement of skills to be taught and model exercises and observations for assessing mastery of these skills.

Otto, Wayne and Peterson, Joe. A statement of skills and objectives for the Wisconsin Prototypic System of Reading Skill Development. Working Paper No. 23. vii + 68 p August 1969.

The purposes of this paper are (a) to present a revision of the Outline of Reading Skills and (b) to present statements of objectives for the areas of word attack skills, comprehension skills and study skills.

Otto, Wayne. The Wisconsin Prototypic System of Reading Skill Development: An interim report. Working Paper No. 26. vii + 40 pp. August 1969.

This paper is an interim report on the Wisconsin Prototypic System of Reading Skill Development. Developmental activities prior to and projections for activities subsequent to Summer 1969 are described. The first portion of the paper is devoted to an overview of the system: Guidelines for the development of the system are given, followed by a recapitualtion of general developmental activities. Components of the system, their development, and anticipated extensions and revisions are described. In the remainder of the paper implementation of the system is considered. Functions of the system and some tentative suggestions for implementation are given. Field experiences and anticipated field tests of the system are described.

Davis, Mary Lou, Otto, Wayne, and Peterson, Joe. Individual assessment exercises for the Wisconsin Prototypic System of Reading Skill Development. Working Paper No. 27. xii + 112 pp. August 1969.

The main purpose of this paper is to present a revision of the Individual Assessment Exercises, the original assessment component of the Wisconsin Prototypic System of Reading Skill Development. A prefatory statement reviews the background and evolution of these exercises and provides a working framework for use in the classroom.

Graper, Norman, Olson, Esther, Glowacki, Connie, Johns, Helen, Delamater, Thomas, and Smith, Norma. The Wilson Manual for implementing individually guided reading, Janesville, Wisconsin. Working Paper No. 29. v + 71 pp. September 1969. (Out of print.)

This Working Paper is from Project MODELS (Maximizing Opportunities for Development and Experimentation on Learning in the Schools). General objectives of the Program are to develop and test organizations that facilitate research and development activities in the schools and to introduce, and utilize the results of research and development.

Otto, Wayne and Koenke, Karl. Scaling children's statements of the main idea in reading. Working Paper No. 31. vii + 16 pp. January 1970.

In previous work designed to examine children's ability to formulate and state a main idea in reading, a troublesome task had been to devise means for scoring and/or categorizing main idea statements for purposes of description and anaylsis. The development and refinement of a descriptive and of a qualitative scale for use in the study of children's main idea statements are described in this paper. Results of try-outs of both scales are summarized. The salient conclusion is that scales for rating main idea statements can be used effectively in the classroom.

Golub, Lester S. A research-based development cycle for an oral and written language learning program, Grades K-6. Working Paper No. 35. viii + 12 pp. February 1970.

This paper aims to: (1) to outline the developmental cycle of an Oral and Written Language Learning Program, Grades K-6 and (2) to outline a strategy for determining the needs and objectives of this Language Learning Program.

Johnson, Shelby and Fredrick, Wayne. An analysis of a test of 7th grade structural grammar concepts taught in the English Language Arts in Wisconsin curriculum. Working Paper No. 37. viii + 12 pp. May 1970.

TECHNICAL DEVELOPMENT PROGRAM

5/52

Technical Development Program

Director:
Mary R. Quilling

TECHNICAL REPORTS

Completed Publications

Goodwin, William L. The effects on achievement test results of varying conditions of experimental atmosphere, notice of test, test administration, and test scoring. Technical Report No. 2. xii + 44 pp. November 1965. (Out of print.) ED 010 202.

Because of the frequent use of tests as the instruments for data collection in classroom experimentation, 64 Sixth-Grade classrooms representing four achievement strata were tested on a standardized arithmetic test to clarify the complex interaction of variables in the classroom. Of special concern was the effect that "participating in an experiment" has on the teacher as sub-experimenter in classroom experimentation.

Conry, Julianne J. Validity of the rearrangement exercise as a predictor of essay writing ability. Technical Report No. 23. iix + 20 pp. May 1967. ED 016 464.

Variations in scoring the rearrangement exercise, in which the student is required to order a series of events, are investigated empirically. Data from the Paragraph Organization portion of the CEEB English Composition Test were rescored to determine which method yielded scores that correlated best with total essay score.

Porter, Andrew C. A chi-square approach to discrimination among occupations, using an interest inventory. Technical Report No. 24. x + 42 pp. May 1967.

In this report, a set of weights, established by the chi-square technique, is empirically compared with the Kuder weighting scheme. Data were scores by both sets of weights, and the percentage of males correctly classified according to occupation for each weighting scheme was determined.

Houston, Tom R., Jr. On the construction of Latin squares counterbalanced for immediate sequential effects. Technical Report No. 25. iix + 20 pp. May 1967. ED 013 981.

This paper deals with Latin squares as a control for progressive and adjacency effects in experimental designs. The history of Latin squares is reviewed, and several algorithms for the construction of Latin and Greco-Latin squares are proposed. Results are of particular application to rating studies and to designs requiring the "rotation" of teachers in classroom research.

Remstad, Robert C., Baker, Frank B., and Quilling, Mary R. Optimizing the response to a concept attainment task through sequential classroom experimentation. Technical Report No. 85. x + 137 pp. April 1969. ED 035 956.

This study tested the possibility of using the optimization techniques of the response surface model in maximizing the response to a concept learning task.

Harris, Margaret L. and Harris, Chester W. A factor analytic interpretation strategy. Technical Report No. 115.

This paper illustrates the use of a strategy for determining the comparable common factors in a set of data. Both orthogonal and oblique derived solutions were obtained for each of several different initial factor methods. The results were compared across the various solutions and three types of factors were determined: comparable common factors, comparable specific factors, and non-comparable factors.

In Preparation

Toothaker, Larry E. An empirical investigation of the permutation t-test as compared to student's t-test and the Mann Whitney U-test.

THEORETICAL PAPERS

Completed Publications

Klausmeier, Herbert J., Wardrop, James L., Quilling, Mary R., Romberg, Thomas A., and Schutz, Richard E. With remarks by Leslie D. McLean. Research and development strategies in theory refinement and educational improvement. Theoretical Paper No. 15. vii + 24 pp. November 1968.

Research and development strategies designed for improving classroom instruction and for refining teacher-learning theory and implemented at the Wisconsin Research and Development Center for Cognitive Learning and the Southwest Regional Laboratory are discussed in papers by the directors of each and by members of the R & D Center staff.

WORKING PAPERS

Completed Publications

Fredrick, Wayne C. Interviews with European educational researchers. Working Paper No. 9. viii + 46 pp. December 1967. (Out of print.)

Research procedures, specific problems under investigation, and the development of research programs are described as they were discussed with researchers in eight countries visited by the author and Professor C. W. Harris.

BOOKS

Completed Publications

Klausmeier, Herbert J. and O'Hearn, George T., Eds. Research and Development Toward the Improvement of Education. Dembar Educational Research Services, Inc., 1968. $5.75. 163 pp.

COMPLETED PROJECTS IN PROGRAM 1

5/6/57

Project 102
(Phase 1)

Title: Computer Simulation and Theory

Principal Investigator:
Frank B. Baker, Professor of Educational Psychology

THEORETICAL PAPERS

Completed Publications

Baker, Frank B. The development of a computer model of the concept attainment process: a preliminary report. Theoretical Paper No. 5. xiv + 62 pp. October 1966. (Out of print.) ED 013 978.

This paper describes the development of an IPL-V computer model to obtain a better understanding of the psychological processes underlying human concept attainment. The model has been based on theoretical grounds, "think-aloud" protocols, and speculations as to the nature of concept attainment.

Baker, Frank B. The development of a computer model of the concept attainment process: a final report. Theoretical Paper No. 16. xi + 112 pp. November 1968.

Through the development of a computer model of the concept attainment process the author has obtained a better understanding of the psychological processes underlying human concept attainment. The model suggests that the majority of the information processed by human subjects is internally created; hence, new techniques are needed to elicit this information.

Project 105

Title: Rule Learning

Principal Investigator:
Harold J. Fletcher, Associate Professor of Psychology
(Now at Florida State University)

TECHNICAL REPORTS

Completed Publications

Fletcher, Harold J. and Garsky, John P. Logical inference in discrimination learning of young children. Technical Report No. 50. vii + 9 pp. April 1968. (Out of print.) ED 036 314.

This study reports on children's learning of cognitive rules. The processes of classification and logical inference in 76 4- to 7-year-old children were investigated with the finding that some of these children did demonstrate inferential reasoning. Used successfully, the task in this study provides a basis for further research on studying the development of logical reasoning in young children.

Grogg, Tommy Michael. A developmental study of sign-differentiated and non-sign-differentiated conditional discrimination learning. Technical Report No. 55. ix + 17 pp. May 1968. (Out of print.) ED 024 103.

The ability to make relational discriminations, i.e., to solve problems by responding to the relationships between cues rather than to the absolute properties of individual cues is examined. The laboratory analogy of this type of problem is referred to as a conditional discrimination problem. Mr. Grogg first empirically demonstrates the difference between a sign-differentiated (SD) and a non-sign-differentiated (NSD) conditional discrimination problem, the former not necessarily requiring a relational rule for solution but the latter necessarily involving true relational learning. Secondly, by testing 6th graders, 10th Graders and college sophomores, data are provided concerning the developing ability to solve such problems. The results indicated tnat at each grade level the NSD problem was more difficult than the SD problem. Also revealed was a monotonic developmental trend in conditional problem-solving ability. The results were interpreted in terms of 1) a hierachy of response tendencies, and 2) a differential cognitive requirement.

Kemmerer, Joseph T., Sawin, Douglas B., and Freiheit, Gretchen. Inference in discrimination learning of early elementary school children. Technical Report No. 74. vii + 11 pp. February 1969.

Sixteen Kindergarten and 28 First-Grade children were tested on two-choice object discrimination problems. A prompt light indicated the positive (reward) object P on all training trials, and these were followed by a single nonprompted test trial during which a new object (X) replaced either P (X+N problems) or N (P+X problems) or neither (P+N control problems). Two additional control problems assessed verbal responses to the P and N objects alone. All Ss followed the promp (i.e., displaced only P) and therefore never directly observed the nonreward value of N on prompted trials. However, performance was significantly above chance on nonprompted X+N trials. Control conditions and verbal reports permitted the conclusion that the negative (nonrewarded) value of N had been inferred while responding to P on prompted trials.

Replicating previous findings that preschool and First-Grade children were able to achieve a significant degree of inferential learning about a non-responded-to object on a two-choice object discrimination task, the present results further suggest that stimulus novelty is not an important factor in cue-substitution procedures.

THEORETICAL PAPERS

Completed Publications

Fletcher, Harold J. Toward a general model for describing cognitive processes. Theoretical Paper No. 23. ix + 17 pp. December 1969.

The first part of this paper briefly describes two studies concerned with cognitive processes in children. One study examined the ability of Kindergarten and First-Grade children to apply a simple rule of logical inference in order to solve a two-object discrimination problem.

The practical usefulness of this theoretical model for educational research was demonstrated by describing a successful elementary school mathematics project which stressed the analysis of mathematical statements into statements of underlying cognitive operations of processes.

Project 106

Title: Project Motivated Learning

Principal Investigator:
Arthur Staats, Professor of Educational Psychology
(Now at the University of Hawaii.)

TECHNICAL REPORTS

Completed Publications

Staats, Arthur W., Minke, Karl A., Goodwin, William L., and Landeen, Julie. "Motivated Learning" reading treatment with additional subjects and instructional-technicians. Technical Report No. 22. x + 18 pp. March 1967. ED 015 110.

In this report is described the successful extension of learning principles to complex human behavior namely; namely, reading behaviors, of highly retarded readers. The instructional program and procedures developed by Staats were administered to junior high school students by persons untrained in teaching.

Staats, Arthur W. Replication of the "Motivated Learning" cognitive training procedures with culturally deprived preschoolers. Technical Report No. 59. ix + 17 pp. August 1968. (Out of print.) ED 029 708.

This research is concerned with training children to count and write. A reinforcer system, used to maintain the children's attention and participation over a long period of time, is based upon tokens which are backed up by material reinforcers. Subjects were 12 four-year-old culturally deprived children.

Van Mondfrans, Adrian P. Learning principles and procedures applied to remedial reading with normal and educable mentally retarded fourth-, fifth-, and sixth-grade children. Technical Report No. 62. ix + 26 pp. September 1968. (Out of print.)

The present study was designed to further validate the Staats' procedures and to demonstrate their generality by extending their application to a population of pre- and early-adolescent retarded readers.

Minke, Karl A. The grammatical form class of verbs and the operant conditioning of word classes. Technical Report No. 84. x + 105 pp. June 1969. ED 037 446.

An analysis of part-of-speech membership was made utilizing certain mechanisms that have been proposed to explain the nature of word classes. One implication of the model was that sentences may be regarded as sequences of grammatical habit families.

Staats, Arthur W., Minke, Karl A., and Butts, Priscilla. A token reinforcement remedial reading program administered by instructional-technicians. Technical Report No. 127. x + 24 pp.

THEORETICAL PAPERS

Completed Publications

Staats, Arthur W. Emotions and images in language: a learning analysis of their acquisition and function. Occasional Paper No. 1. x + 18 pp. June 1966. (Out of print.) ED 010 213.

It is suggested that a learning theory that integrates instrumental and classical conditioning, cutting across theoretical lines, can serve as the basis for a comprehensive theory of language acquisition and function. In this paper, Professor Staats illustrates the possibilities of such an integrated learning approach.

Minke, Karl A. The early development of verbal mediation in children: An inter-paradigm comparison. Theoretical Paper No. 21. vii + 14 pp. July 1969. ED 036 864.

It is suggested that because of the tendency of psychologists to characterize behavioral phenomena in distinctive ways, it is frequently difficult to determine if the same label is being used to refer to the same phenomena by different investigators. One strategy to overcome this problem is to determine if similar conclusions are reached when the same dependent variable is manipulated by various investigators operating under different paradigms.

WORKING PAPERS

Completed Publications

Staats, Arthur W., Van Mondrans, Adrian P., and Minke, Karl L. Manual of administration and recording methods for the Staats "Motivated Learning" reading procedure. Working Paper No. 6. iv + 26 pp. April 1964. (Out of print.) ED 015 107.

The application of an integrated-functional approach to learning in the area of reading is described. The method, which involves a system of extrinsic reinforcement employing tokens, was devised for the treatment of retarded readers, particularly those who are difficult to teach in the normal classroom situation. The procedures, explicit and simple to administer, are applied on a one-to-one basis by non-professional personnel.

PRACTICAL PAPERS

In Preparation

Butts, Priscilla A. and Sanders, June. A manual for supervising a tutorial program in remedial reading for Inner City students. Practical Paper.

Project 108

Title: Media and Concept Learning

Principal Investigator:
Bruce H. Westley, Professor of Journalism

TECHNICAL REPORTS

Completed Publications

Severin, Werner. CUE summation in multiple-channel communication. Technical Report No. 37. vii + 12 pp. January 1968. ED 021 463.

The performance of Seventh-Grade pupils on a simple word recognition task is observed in order to determine the relative effectiveness of providing auditory or visual cues or both combined to be either redundant or interfering cues. The results increase our knowledge of the conditions under which multiple-channel communication provides the maximum amount of information transmission.

WORKING PAPERS

Completed Publications

Hsia, Hower J. An information theory approach to communication and learning. Working Paper No. 13. vii + 26 pp. April 1969.

The merits and deficiencies of information theory in communication and learning research are examined in this report. The conclusion reached is that information theory may be one of the best instruments for the development of a general, systematic communication-and-learning theory.

Project 109

Title: Rehabilitation of Disadvantaged Youth in Respect to Basic Educational and Social Skills

Principal Investigator:
Robert E. Grinder, Professor of Educational Psychology

TECHNICAL REPORTS

Completed Publications

Askov, Warren H., LaVoie, Joseph C., and Grinder, Robert E. Cognitive style and social responsibility: A survey of the literature and an empirical study of an instrument for altering high school students' sense of responsibility. Technical Report No. 90. xi + 138 pp. July 1969. ED 035 958.

The purpose of this study was to explore whether differences exist between competent and incompetent high school students in their styles of thinking and in thier attitudes toward what they consider to constitute socially responsible behavior. (The term "social responsibility" was defined, for the purpose of this study, as the ability to anticipate the consequences of one's own actions and to account for one's own behavior.) Apart from ability, scholastic drop-outs and underachievers share many characteristics that distinguish them from their more persistent classmates.

Project 110

Title: Motivation and Concept Learning

Principal Investigator:
Thomas J. Johnson, Assistant Professor of Educational Psychology

TECHNICAL REPORTS

Completed Publications

Baldwin, Thelma L. and Johnson, Thomas J. Teacher behaviors and effectiveness of reinforcement. Technical Report No. 9. ix + 22 pp. 1966. ED 010 511.

The effects of variations in two aspects of teacher behavior--punitiveness and expertise--are reported. The methodology developed for this experiment might be used to assess the varied effects of a number of teacher behaviors.

COMPLETED PROJECTS

IN PROGRAM 2

Project 202

Title: A System of Individually Guided Instruction:
English Language, Composition, and Literature

Principal Investigator:
Robert C. Poole, Retired Professor of English
Nathan S. Blount, Associate Professor of English and of Curriculum and Instruction

TECHNICAL REPORTS

Completed Publications

Blount, Nathan S., Klausmeier, Herbert J., Johnson, Shelby L., Fredrick, Wayne C., and Ramsay, James G. The effectiveness of programmed materials in English syntax and the relationship of selected variables to the learning of concepts. Technical Report No. 17. xii + 52 pp. January 1967. ED 013 256.

The experimentation described in this report was conducted jointly by the English and the concept learning groups in the Center to field test 21 programmed lessons in English syntax and concurrently to extend knowledge of five situational variables related to the efficiency of learning conepts. Pre-Eighth Graders stratified by sex and IQ, participated in the study.

Fredrick, Wayne C., Blount, Nathan S., and Johnson, Shelby L. A comparison of verbal statement, symbolic notation, and figural representation of grammar concepts. Technical Report No. 64. ix + 19 pp. October 1968. ED 029 892.

The importance of three modes of representation in presenting a series of grammar concepts was investigated. One mode was entirely verbal. The second was based on a symbolic notation and the third was based on diagrams. Each mode was tested with 72 Eighth Grade subjects of high, medium, and low ability.

Blount, Nathan S., Johnson, Shelby L., and Fredrick, Wayne C. The effect of a study of grammar on the writing of eighth-grade students. Technical Report No. 69. ix + 44 pp. December 1968. ED 036 515.

A test of programmed materials in structural and transformational grammar was administered to 8th Graders in two schools. 1000-word writing samples were obtained from all Ss prior to and after the experiments.

Blount, Nathan S., Johnson, Shelby L., and Fredrick, Wayne C. A comparison of the writing of eighth- and twelfth-grade students. Technical Report No. 78. ix + 30 pp. April 1969. ED 035 652.

In each grade 16 males and 16 females were equally distributed into two ability groups on the basis of standardized IQ test scores. Differences between boys and girls and between high and average levels was not significant on any measure.

Blount, Nathan S., Fredrick, Wayne C., Johnson, Shelby L. Measures of writing maturity from two 500-word writing samples. Technical Report No. 97. ix + 9 pp. September 1969. ED 036 522.

The purpose of this study was to estimate the reliability of various measures of writing behavior using 500-word samples instead of 1,000 words. The themes of 135 Eighth Graders were collected over a period of 6 weeks. Themes written during the first 3 weeks were compared to those of the second 3 weeks.

THEORETICAL PAPERS

Completed Publication

Pooley, Robert C., and Golub, Lester S. Concepts and objectives for learning the structure of English in grades 7, 8, and 9. Theoretical Paper No. 22. ix + 23 pp. November 1969.

The following outline of concepts for learning the structure of English is an attempt to set down in logical order the basic concepts involved in the recognition and understanding of the English language. It emphasizes the behavorial and social aspects of language as the foundation for instruction.

WORKING PAPERS

Completed Publications

Pooley, Robert C., and Johnson, Shelby L. The application of transformational grammar to the teaching of English syntax in grades 7 and 8 at the Starbuck Junior High School, Racine, Wisconsin. Working Paper No. 11. 23 pp. December 1968. viii + 24 pp.

This study was undertaken because of concern about repetition of instruction of traditional grammer and its failure to supply a system of advanced syntax, as it is taught in American schools today. After four years of study engaging hundreds of Wisconsin teachers of all levels from the kindergarten to the graduate schools of universities, the curriculum guide, Teaching the English Language in Wisconsin, was published. It was the result of joint efforts of the R & D Center and the English Curriculum Center for the Department of Public Instruction of Wisconsin.

Golub, Lester S., Fredrick, Wayne C., and Johnson, Shelby L.
Development and refinement of measures of linguistic abilities. Working Paper No. 33, vii + 12 pp. March 1970.

The purpose of this working paper is to report the pilot-testing and revision of a paper-and-pencil test of linguistic ability. The test was taken by ten Fourth Graders and major revisions were made. The revision was designed as an objective measure of the ability to think of, manipulate, and evaluate words and sentences as structural and transformational objects.

Project 205

Title: Prototypic Instructional Systems: The Teaching and Learning of Concepts in Verbal Argument

Principal Investigator:
Ronald R. Allen, Associate Professor of Speech and of Curriculum and Instruction

TECHNICAL REPORTS

Completed Publications

Allen, Ronald R., Feezel, Jerry D., Kauffeld, Fred J., and Harris, Margaret L. The development of the Wisconsin Tests of Testimony and Reasoning Assessment (WISTTRA). Technical Report No. 80. ix + 37 pp. April 1969. (Out of print.) ED 036 521.

This paper reports the development of a test battery for measuring student mastery of certain verbal skills basic to critical thinking. The particular data presented were gathered by an administration of the fifth edition of the test battery to over 3,000 junior/senior high students in four Wisconsin School systems.

Harris, Margaret L. A factor analytic study of the Wisconsin Tests of Testimony and Reasoning Assessment (WISTTRA). Technical Report No. 100. ix + 37 pp. October 1969.

Subject matter specialists in speech developed a taxonomy of concepts and abilities related to verbal argument as used in ordinary discourse. It was the purpose of this study to use data collected to assess these hypothesized abilities to determine, using factor analytic procedures, the construct validity of the taxonomy.

Rott, Robert K., Feezel, Jerry D., Allen, Ronald R., and Harris, Margaret L. Student abilities in the evaluation of verbal argument. Technical Report No. 106. ix + 27 pp. November 1969.

During this study, a battery of seven tests, known collectively as the "Wisconsin Tests of Testimony and Reasoning Assessment" (WISTTRA), was administered to more than 3000 participating subjects.

THEORETICAL PAPERS

Completed Publications

Allen, R. R., Feezel, Jerry D., and Kauffeld, Fred J. A taxonomy of concepts and critical abilities related to the evaluation of verbal arguments. Theoretical Paper No. 9. vii + 36 pp. August 1967. ED 016 658.

The purpose of this paper is to identify concepts and clusters of concepts which adequately define what knowledge a student must possess if he is to critically evaluate everyday discourse.

Allen, R. R. and Rott, Robert K. The nature of critical thinking. Theoretical Paper No. 20. vii + 19 pp. May 1969. (Out of print.) ED 036 861.

The present paper attempts to sort out direct attempts at defining critical thinking. Such definitions are classified by three differing points of view: critical thinking as evaluation, critical thinking as problem solving, and critical thinking as a pluralistic act.

PRACTICAL PAPERS

Completed Publications

Allen, R. R., Feezel, Jerry D., and Kauffeld, Fred J. The Wisconsin Tests of Testimony and Reasoning Assessment (WISTTRA). Practical Paper No. 6. vii + 41 pp. January 1969. (Out of print.) ED 036 863.

This paper has two main subdivisions: Evaluation of Testimony and Evaluation of Reasoning. Test keys and time estimates are given in the appendixes.

SPECIAL REPORT

Allen, R. R., Kauffeld, Fred J., and O'Brien, William R. A semiprogrammed introduction to verbal argument: Part I, Argument in perspective. v + 70 pp. December 1968. (Out of print). Part II, Argument through testimony. v + 108 pp. December 1968. (Out of print). Part III, Argument through reasoning I. v + 228. December 1968. (Out of print.) Part IV, Argument through reasoning II. v + 338. December 1968. (Out of print.) Not available from ERIC.

Project 206

Title: Concepts in Political Science

Principal Investigator:
Jack Dennis, Assistant Professor of Political Science

TECHNICAL REPORTS

Completed Publications

Dennis, Jack, Billingsley, Keith R., and Thorson, Sondra J. A pilot experiment in early childhood political learning. Technical Report No. 63. ix + 30 pp. September 1968. (Out of print.)

This study is a pilot experiment in early childhood learning designed to gain information about whether young children are able to comprehend the basic political concepts as part of an interconnected set of concepts about political phenomena.

Dennis, Jack. Political learning in childhood and adolescence: A study of Fifth, Eighth, and Eleventh graders in Milwaukee, Wisconsin. Technical Report No. 98. xi + 91 pp. October 1969.

The present study utilizes the interview reponses of 297 Fifth, Eighth, and Eleventh Grade children and 205 of their parents to analyze patterns of political learning before and after adolescence.

THEORETICAL PAPERS

Completed Publications

Dennis, Jack. With the assistance of Irvin H. Bromall and Margaret Colvin Tropp. A survey and bibliography of contemporary research on political learning and socialization. Occasional Paper No. 8. ix + 23 pp. April 1967. ED 013 979.

The extensive bibliography is introduced with a survey of political socialization research. Ten basic problem dimensions are identified and illustrated with existing empirical hypotheses.

Dennis, Jack. Terminal report of the political learning project. Theoretical Paper No. 19. ix + 6 pp. April 1969. ED 037 472.

This terminal report summarized the four major activities of the political learning project.

PROGRAM 3

FACILITATIVE ENVIRONMENTS

Program was completed in FY-69

8 3/84

Project 301

Title: Project MODELS

Principal Investigators:
Herbert J. Klausmeier, V. A. C. Henmon Professor of Educational Psychology
Richard G. Morrow, Assistant Professor of Educational Administration

TECHNICAL REPORTS

Completed Publications

Klausmeier, Herbert J., Cook, Doris M., Goodwin, William L., Tagatz, Glenn E., and Pingel, Louis. Individualizing instruction in language arts through development and research in R & I units of local schools, 1965-66. Technical Report No. 19. x + 26 pp. February 1967. (Out of print.) ED 013 255.

R & I (research and instruction) Units, first established in schools in Spring 1966, are described as organizations that facilitate research and development on cognitive learning in schools. Eight experiments--one in spelling, two in handwriting, and five in reading--conducted in some of the first Units are reported.

Wardrop, James L., Cook, Doris M., Quilling, Mary, Klausmeier, Herbert J., Espeseth, Constance, and Grout, Carolyn. Research and development activities in R & I units of two elementary schools of Manitowoc, Wisconsin, 1966-67. Technical Report No. 35. viii + 8 pp. November 1967. (Out of print.) ED 019 796.

In addition to discussing activities of the R & I Units, this report describes controlled experiments conducted in Third-Grade arithmetic instruction and Fourth-Grade spelling instruction.

Cook, Doris M., Wardrop, James L, Tagatz, Glenn E., and Quilling, Mary. Research and development activities in R & I units of two elementary schools of Janesville, Wisconsin, 1966-67. Technical Report No. 45. ix + 17 pp. March 1968. (Out of print.) ED 023 175.

Results of two controlled experiments conducted in the Units are reported and evaluated. One study, in which four methods of teaching First-Graders arithmetic were compared, led to the suggestion that techniques be selected specifically for the concept being taught.

Quilling, Mary, Cook, Doris M., Wardrop, James L., and Klausmeier, Herbert J. Research and development activities in R & I units of two elementary schools of Milwaukee, Wisconsin, 1966-67. Technical Report No. 46. ix + 17 pp. March 1968. (Out of print.) ED 020 911.

Results of two controlled experiments of motivational procedures and individualization of instruction conducted in the units are reported and evaluated.

Klausmeier, Herbert J. and Quilling, Mary. (Eds.) Research and development activities in R & I units of four elementary schools of Madison, Wisconsin, 1966-67. Technical Report No. 48. ix + 24 pp. April 1968. (Out of print.) ED 021 696.

Individualization and motivation were the focal points of these projects, with special attention given to language arts.

Klausmeier, Herbert J., Quilling, Mary, and Wardrop, James L. (Eds.) Research and development activities in R & I units of five elementary schools in Racine, Wisconsin, 1966-67. Technical Report No. 52. xi + 44 pp. April 1968. (Out of print.) ED 023 176.

One significant finding of this experiment was that a well-planned language enrichment program for disadvantaged Kindergarten children improves their communication skills.

Morrow, Richard G., Quilling, Mary R., and Fox, Frank. Student achievement and attitudes in Instruction and Research units in two elementary schools in Janesville, Wisconsin, 1967-68. Technical Report No. 76. xi + 23 pp. February 1969.

The Multiunit organizational plan for elementary schools, and its basic element, the Instruction and Research Unit, is concerned with developing an environment in local schools and school systems which facilitates individually guided learning by students, research and development activities, and the in-service development of teachers.

THEORETICAL PAPERS

Completed Publications

Klausmeier, Herbert J., Goodwin, William L., Prasch, John, and Goodson, Max R. With an introduction by Warren G. Findley. Project MODELS: Maximizing opportunities for development and experimentation in learning in the schools. Theoretical Paper No. 3. vii + 30 pp. July 1966. (Out of print.) ED 010 214.

Following the introduction relating the need for new approaches in educational research to the R & D Center's Program of the U. S. Office of Education, the authors in turn describe (1) the project's origin and rationale including the concepts of learning specialists and R & I Units in local schools, (2) the sophisticated research possible in the Units, (3) contributions of the R & I Units to the solution of local educational problems, and (4) a related investigation of the process of change in the schools.

WORKING PAPERS

Completed Publications

Cook, Doris M., Klausmeier, Herbert J., Cook, Robert, and Loose, Caroline A. Guidelines for initiating an R & I unit. Working Paper No. 1. 30 pp. October 1966. (Out of print.) ED 010 505.

The first sections of this paper are devoted to a description of the nature, composition, and functions of R & I Units. Roles of the three types of personnel in the Unit are clarified. Procedures for initiating Units, the conditions essential for effective operation of R & I Units, and the procedures for initiating research projects in operating Units are the primary topics.

Wardrop, James L., Tagatz, Glenn E., Klausmeier, Herbert J., Kennedy, Barbara J., and Cook, Doris M. A plan for field testing R & I Units. Working Paper No. 4. vi + 40 pp. February 1967. (Out of print.) ED 016 011.

Alternative designs for the evaluation of the unique instructional organization R & I Unit are discussed. Specific programs of evaluation and the instruments planned for use in four Wisconsin cities are briefly outlined.

Klausmeier, Herbert J., Cook, Doris J., Tagatz, Glenn E., and Wardrop, James L. Project MODELS: A facilitative environment for increasing efficiency of pupil learning and for conducting educational research and development. Working Paper No. 5. iv + 36 pp. May 1967. (Out of print.) ED 016 004.

Here is a comprehensive story in words and pictures of the first R & I Units. Features described include: the prototypic building organization, plans for organizing a school into Units and developing a prototypic instructional program, other non-research types of units, training Unit leaders, field testing R & I Unit concepts, and roles and responsibilities of various personnel in R & I Units.

Smith, Richard J. and Klausmeier, Herbert J. The development of a facilitative environment for learning and research through R & I Units in the secondary school, 1966-67. Working Paper No. 8. iv + 12 pp. July 1967. ED 016 005 and ED 017 053.

The nature, purpose, and necessary preparation for introduction of the R & I Unit in the secondary schools id described. Eight Wisconsin schools illustrate the different kinds of patterns within which R & I Units can be effective at the secondary school level. Research and development activities of various Units in the subject-matter areas of science, English, mathematics, social studies, and physical education in four school systems are briefly discussed.

Morrow, Richard, Sorenson, Juanita, and Glasrud, George. Evaluation procedures for use with the multiunit elementary school personnel. Working Paper No. 21. (Out of print.)

The Multiunit Elementary School is intended to provide an environment in which individually guided learning can be developed, to facilitate research which is essential for improving instruction, to bring into the school promising educational innovations, and to facilitate the preservice and inservice education of teachers. This Working Paper is a "blue print" for counties initiating plans for such an operation.

Pellegrin, Rolland J., Slagle, Allen T., and Johansen, Lloyd. Some organizational characteristics of multiunit schools. Working Paper No. 22. iii + 43 pp. June 1969. (Out of print.)

The study of the Multiunit School, made by CASEA, is based on intensive case studies of eight schools. Four of these were Multiunit Schools; the other four were control schools selected by the Wisconsin Center. This paper is a summary of certain data dealing with the schools that were studied. It also raises questions about the organizational problems that may arise in Multiunit Schools.

SPECIAL REPORT

Klausmeier, Herbert J., Morrow, Richard, and Walter, James E. Individually Guided Education in the Multiunit Elementary School: Guidelines for Implementation. Madison, Wisconsin: Wisconsin Department of Public Instruction, August 1968. 52 pp.

Project 302

Title: Models for Effecting Planned Educational Change

Principal Investigators:
Max R. Goodson, Professor of Educational Policy Studies
Burton W. Kreitlow, Professor of Educational Policy Studies and of Agricultural and Extension Education
Warren O. Hagstrom, Professor of Sociology

TECHNICAL REPORTS

Completed Publications

Hilfiker, Leo R. The relationship of school system innovativeness to dimensions of interpersonal behavior in eight school systems. Technical Report No. 70. x + 67 pp. January 1969. (Out of print.) ED 029 892.

The relationship between school system innovativeness and selected dimensions of interpersonal behavior is examined in eight school systems.

Hagstrom, Warren O. and Gardner, Leslie L. Hugh. Characteristics of disruptive high school students. Technical Report No. 96. ix + 24 pp. September 1969. (Out of print.)

This report contrasts the characteristics of high school students with disorderly histories and those without such histories.

In Preparation

Hagstrom, Warren O. and Gardner, Leslie L. Hugh. Characteristics of orderly and disorderly high school students. Technical Report.

THEORETICAL PAPERS

Completed Publications

Goodson, Max R. Models for effecting planned educational change. Part IV of Theoretical Paper No. 3. (Not available as a separate) 1966. 14 pp. (Out of print.) ED 010 214.

The study of change is suggested to be most significant in providing for utilization of new knowledge, products, and structures. Nine major ideas for conjecturing about change are advanced and a study of change is outlined.

Goodson, Max R. and Hammes, Richard. A team designed for school system changing. Theoretical Paper No. 11. ix + 26 pp. February 1968. Reprint May 1969. (Out of print.) ED 023 162.

This paper is based upon the premise that the problems of changing a school system require a systematic approach that coordinates various efforts within the system. A team is expected to plan for and manage specific changes as well as to facilitate an innovative climate in a school system.

Kreitlow, Burton W. and MacNeil, Teresa. An evaluation of the model for educational improvement as an analytical tool for describing the change process. Theoretical Paper No. 18. ix + 17 pp. March 1969. (Out of print.)

This paper describes the structure of the Model for Educational Improvement. It reports on an informal test of the hypothesis that the Model is a valid description of the change process within a school system. Data for this test are provided through tape recordings and occasional observations of meetings of change-agent teams operating in three school systems.

Kreitlow, Burton W. and MacNeil, Teresa. A model for educational improvement in extension. Theoretical Paper No. 26. viii + 8 pp. April 1970.

The authors propose that the Model for Educational Improvement is a suitable instrument for describing the change process within the context of university extension systems. Originally designed to describe the flow of the change process in school systems, the Model is generalized here to describe the flow of the change process in an extension system. In doing so an assumption is made that Extension is also an open system, with a specific internal structure, where an observable improvement process occurs. The Model permits an idea to be traced from the point where it enters the system, to where it becomes part of the organization's action program.

PRACTICAL PAPERS

Kreitlow, Burton W. and MacNeil, Teresa. The school board and a model for educational improvement. Practical Paper No. 10. viii + 8 pp. April 1970.

The introduction of improvements in school systems requires knowledge of how change takes place. The authors propose the Model for Educational Improvement as an instrument for describing the process of change in school systems. This model is a composite of ideas derived from the findings of researchers in the fields of agriculture and education and from the authors' observations of the change process in five Wisconsin school districts.

Project 303

Title: Longitudinal Study of Education Effectiveness of Reorganized School Districts

Principal Investigators:
Burton W. Kreitlow, Professor of Educational Policy Studies and of Agricultural and Extension Education

TECHNICAL REPORTS

In Preparation

Kreitlow, Burton W. Long-term study of educational effectiveness of newly formed centralized school districts in rural areas. Technical Report No. 133.

OTHER COMPLETED PROJECTS

94/95

Project 601

Title: Adult-Re-Education

Principal Investigator: Burton W. Kreitlow, Professor of Educational Policy Studies and of Agricultural and Extension Education

TECHNICAL REPORTS

Completed Publications

Boyd, Robert D. The psychological and mythmaking phenomena in visual symbolization of adult illiterates. Technical Report No. 93. x + 20 pp. August 1969. Ed 034 962.

This pilot study was a limited exploratory investigation which examined certain aspects of visual symbolization ability of matched pairs of literate and illiterate adults.

THEORETICAL PAPERS

Completed Publications

Kreitlow, Burton W. Educating the adult educator: Part 2. Taxonomy of needed research. Theoretical Paper No. 13. ix + 20 pp. May 1968. (Out of print.) ED 023 031.

This theoretical paper is the concluding part of an extensive examination of the problem of educating adult educators. The first part dealt with the relationship of adult education to other disciplines. This part establishes a framework for classifying areas of needed research in the field of adult education.

Kreitlow, Burton W. Basic exploration in adult re-education: A terminal report. Theoretical Paper No. 25. x + 10 pp. April 1970.

Project 701

Title: Culturally Disadvantaged

Principal Investigator: Julian C. Stanley, Professor of Educational Psychology

TECHNICAL REPORTS

Completed Publications

Biaggio, Angela M. B. Relative Predictability of freshman grade-point averages from SAT scores in Negro and white Southern colleges. Technical Report No. 7. xii + 32 pp. 1966 ED 010 509.

A comparison of the accuracy of prediction of freshman grades in Negro and non-Negro colleges, via SAT-verbal and SAT-mathematical scores, is described in this report. Correlations between predictors and freshman grade-point averages were compared through a three-factor analysis of variance singly nested design.